Temporal and Situational Dynamics of Dyadic Verbal Communication in Intimate Relationships across the Lifespan

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"Yesterday I was clever, so I wanted to change the world.
Today I am wise, so I am changing myself"
Rumi

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Abstract

Communication is the most important part of any funtional relationship. In order to have an effective communication, it needs to be adapted to the temporal and situational demands of the dyadic interactions. The present thesis focuses on temporal and situational dynamics of dyadic verbal communication in a conflict situation and in two dyadic coping situations in couples. These temporal and situational dynamics are then investigated in the lifespan context. Process-oriented theories suggest specific chains of behaviors depending on time and the situation in dyadic interactions to be good for a succesfull communication in couples (Bodenmann, 2005; Gottman, 1979). Studies that investigate these dyadic interactions mostly focus on between-couple differences. Also studies that focus on ageing and intimate relationship mostly compare the average behaviors of couples of different ages across the interactions. This dissertation investigates these dyadic processes as suggested by theory with focusing on temporal and situational changes in couples' verbal communication. Throughout this dissertation, to study dyadic verbal communication the focus is on the use of personal pronouns (i.e. *I* words, *you* words and *we* words), which have been found to be meaningful measures to investigate psychological processes, such as self-disclosure and togetherness in relationships. The first study examines the temporal dynamics of dyadic verbal communication by investigating couples' use of personal pronouns in a conflict situation. The first assumption of this study was that temporal changes of pronoun use over the course of a conflict interaction are aligned with the suggested segmentation of dyadic conflict interactions in the agenda-building, argue and negotiation phases (Gottman, 1979). Further, it was explored whether these temporal dynamics of verbal communication differ between couples from different age groups. To test these assumptions, pronoun use by 360 couples from three different age groups (young, middle-aged and old) in an eight-minute conflict interaction was observed and tested using multilevel models for longitudinal dyadic data. The statistical tests confirmed our assumption, showing that the temporal dynamics of pronoun use reflect the within-dyad processes in a conflict interaction and that these temporal dynamics differ between couples from different age groups.

The main aim of the second paper was to examine the temporal dynamics of couples' pronoun use in two dyadic coping situations. Similar to the first study, it was assumed that the pronoun use of couples over the time of a dyadic coping interaction follows specific patterns, which reflect the dyadic processes in coping situations as suggested by

Bodenmann (2005). In addition, it is assumed that the situational characteristics of each interaction (being the stress communicator or the support provider) require adaptation of verbal communication to the specific situation. To tests these assumptions, use of *I* words, *you* words and *we* words of 360 couples in two eight-minutes dyadic coping interactions were investigated. In this study, each partner is once the stress communicator (talking about his/her stress topic) and the other time the support provider (showing support efforts and providing support to the partner). Results of multilevel models for longitudinal dyadic data confirmed our assumptions. Results showed that pronoun use by couples across different situations follows patterns that suggest, optimally dyadic coping interactions start with disclosure of the stress communicator (higher word count, higher use of *I* words and *we* words), followed by supportive efforts of the support providers (higher word count in the second half of the interaction, more frequent use of *you* words).

Finally, in the third study it was tested whether the temporal and situational dynamics of verbal communication in dyadic coping interactions change depending on the age of the partners. To test the associations between age and these dynamic processes, use of personal pronouns by couples (age 20 - 80) with a large range of age has been tested in two dyadic coping interactions, where dyads changed their role after the first dyadic coping interaction. Results of multilevel models for longitudinal dyadic data showed different patterns of temporal change depending on the situation and also depending on the age. In summary, higher age was associated with less variation of verbal communication over time, less use of *I* words, less use of *you* words and higher frequency of use of *we* words. These results can be interpreted as less involvement of older couples in the communication that is related to stress and more communal perspective in dealing with stressful situations.

Results of this dissertation showed that investigating the temporal and the situational dynamics of couples' verbal communication is a promising way to study the dyadic processes in intimate relationships. This dissertation ends with a general discussion and outlook on future research.

Zusammenfassung

Kommunikation is der wichtigste Teil jeder Beziehung. Fr eine effektive Kommunikation, muss diese an die temporalen und situationalen Anforderungen der dyadischen Interaktion angepasst werden.

In der vorliegenden Dissertation liegt der Fokus auf den temporalen und situationellen Dynamiken der dyadischen verbalen Kommunikation in einer Konfliktsituation und in zwei dyadischen Coping Situationen. Diese Dynamiken werden im Kontext der Lebensspanne untersucht. Prozessorientierte Theorien schlagen Verhaltensketten vor, die in der Abhängigkeit zu der Zeit und zu der Situation auftreten (Bodenmann, 2005; Gottman, 1979). Studien, die sich mit diesen dyadischen Interaktionen befasst haben, fokussieren meistens auf die Unterschiede zwischen Dyaden. Aus diesem Grund ist weniger über die Prozesse innerhalb des Paares während der Interaktion und in unterschiedlichen Situationen bekannt. Auch die Studien, die sich mit dem Thema Beziehungen im Alter befassen, vergleichen meistens das Durchschnittsverhalten der Paare aus unterschiedlichen Altersgruppen. Die vorliegende Dissertation untersucht die dyadischen Prozesse wie es in der Theorie vorgeschlagen wird, wobei der Fokus auf den temporalen und situationellen Veränderungen in der verbalen Kommunikation der Paare liegt. Für die Untersuchung der verbalen Kommunikation fokussiert die gesamte Dissertation auf den Gebrauch der Personalpronomen, *ich*, *du* und *wir* bei den Paaren. Der Gebrauch dieser Pronomen ist von besonderer Bedeutung bei der Untersuchung von psychologischen Prozessen wie Selbstoffenbarung und Zusammengehörigkeit in den intimen Beziehungen. In der ersten Studie werden die temporale Dynamiken der dyadischen verbalen Kommunikation anhand des Gebrauchs der Personalpronomen bei Paaren in einem Konfliktgespräch untersucht. Die erste These dieser Studie war, dass die temporalen Veränderungen des Gebrauchs der Personalpronomen über die Dauer des Gesprächs an die in der Theorie vorgeschlagenen Segmentierungen eines Konfliktgesprächs (Agenda-Bildung, Konflikt-Phase, und Aushandlung-Phase) angepasst sind. Weiter wurde exploriert, ob sich diese temporalen Dynamiken der verbalen Kommunikation bei Paaren aus unterschiedlichen Altersgruppen unterscheiden. Um diesen Annahmen zu testen, wurde der Gebrauch der Personalpronomen von 360 Paaren aus drei unterschiedlichen Altersgruppen (jung, mittel-alt und alt) in einem acht-minütigen Konfliktgespräch untersucht und anhand der Mehrebenanalyse für dyadischen Längsschnittstudien getestet. Die statistischen Analysen bestätigten die Annahmen. Die Resultate zeigten, dass die temporalen Veränderungen des Pronomen-

Gebrauchs die dyadischen Prozesse innerhalb der Paare in einem Konfliktgespräch reflektierten und sich diese temporale Dynamiken in den unterschiedlichen Altersgruppen unterschieden.

In der zweiten Studie wurden die temporale Dynamiken des Wörtergebrauchs in zwei unterschiedlichen Situationen untersucht. Ähnlich wie bei der ersten Studie wurde angenommen, dass die temporalen Veränderungen in der dyadischen verbalen Kommunikation die dyadischen Prozesse in Coping-Situationen reflektieren. Zusätzlich wurde angenommen, dass sich die temporalen Muster je nach Situation (Stress-Kommunikator vs. Support-Anbieter) an deren Herausforderungen anpassen und verändern. Um dieses Annahmen zu testen, wurde der Gebrauch von *ich*-Wörter, *du*-Wörter und *du*-Wörter bei 360 Paaren in zwei acht-minütigen dyadischen Coping-Interaktionen untersucht. Jeder/jede Partner/in wurde einmal in die Situation des Stress-Kommunikators (kommuniziert über eigene belastende Stressoren mit dem Partner) und einmal in die Situation des Support-Anbieters (bietet dem Partner Unterstützung) eingeteilt. Die Ergebnisse der Mehrebenanalyse (für dyadischen Längsschnittstudien) zeigten, dass sich die temporalen Muster je nach Situation (Stress-Kommunikator vs. Support-Anbieter) an die Herausforderungen der bestimmten Situation anpassten und veränderten. Dyadische Coping-Interaktionen begannen mit Selbstoffenbarung des Stress-Kommunikators (höhere Anzahl Wörter und mehr *ich*-Wörter), gefolgt von Unterstützung der Support-Anbieter (höhere Anzahl Wörter und mehr *du*-Wörter). Dieses Muster stimmt mit den in der Theorie vorgeschlagenen Prozessen überein.

In der dritten Studie wurde untersucht, ob in den temporalen und situationellen Dynamiken der dyadischen verbalen Kommunikation Altersunterschiede vorzufinden sind. Um diese dynamischen Prozesse zu untersuchen, wurde der Pronomengebrauch in einer Stichprobe von Paaren im Altersbereich 20-80 Jahre in zwei acht-minütigen dyadischen Coping-Interaktionen untersucht. Nach der ersten Interaktion wurden die Rollen gewechselt. Die Ergebnisse der Mehrebenanalysen für dyadische Längsschnittstudien zeigten unterschiedliche temporale Dynamiken in Pronomengebrauch in Abhängigkeit der Situation und des Alters. Zusammenfassend kann festgehalten werden, dass je höher das Alter ist, desto weniger benutzen die Paare *ich*-Wörter und *du*-Wörter. Diese Resultate dürften so interpretiert werden, dass ältere Paare in der Kommunikation über ein belastendes Thema einerseits weniger Beteiligung, andererseits eine verstärkte paar-orientierte Perspektive im Umgang mit belastenden Situationen zeigen. Die Ergebnisse der drei Studien zeigten, dass das Untersuchen der temporalen und situationellen Dynamiken der

verbalen Kommunikation in der Partnerschaft eine vielversprechende Methode ist, um die dyadischen Prozesse in intimen Beziehungen zu erforschen. Der letzte Teil der Dissertation besteht aus einer abschliessenden Diskussion und Konsequenzen für zuknftige Studien.

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Chapter 1

Introduction

Social relationships are an important part of adults' lives across the lifespan. The most central of these are intimate relationships, as they provide emotional, social, and instrumental support from early adulthood to very old age. In all intimate relationships, communication shapes interactions and is the instrument by which intimate relationships are initiated and maintained. On one hand, the way dyad members in an intimate relationship communicate mirrors how they feel about themselves, their partner, and their relationship. On the other hand, couple communication is related to relationship-specific outcomes such as relationship duration and relationship satisfaction. Hence, investigating dyadic communication in intimate relationships improves understanding of the dyadic processes in an intimate relationship. Theories (Bodenmann, 2005; Gottman, 1979) on different dyadic interaction situations in intimate relationship suggest different dyadic processes over time. However, most of the studies do not investigate these processes over time and in different situations. This thesis aims at contributing to a better understanding of these dyadic processes in couple interactions, explicitly by investigating these processes over time and within couples. For dyadic communication in intimate relationships to be effective, it needs to be adapted to the temporal and situational demands of specific interactions. Temporal adaptations are expected over the course of an interaction. Ideally, how couples communicate with each other in a situation changes over the course of the interaction, thus reflecting the dyadic processes in the situation. Moreover, couples communicate differently depending on the specific situation within which they communicate. Further, the topics of couples' everyday interactions and the way that they handle specific situations change as they age, so it is to be expected that older couples demonstrate different temporal and situational communication dynamics from younger couples. This thesis studies the temporal and situational dynamics of communication in couples from three different age groups with relatively relationship satisfaction.

1.1 Dyadic verbal communication

Relationships start with communication, and communication becomes the most important part of any functional relationship (Gottman & Notarius, 2002). Lack of communication skills is one of the main problems in intimate relationships and can affect relationship qual-

ity (Gottman & Krokoff, 1989) and relationship stability (Carrere, Buehlman, Gottman, Coan, & Ruckstuhl, 2000). Hence, training of communication skills is one of the central elements of couple therapy and marriage education programs (Blanchard, Hawkins, Baldwin, & Fawcett, 2009; Jacobson & Addis, 1993).

Communication, which by definition is the sharing of information, can be divided into verbal and nonverbal communication. Verbal communication, which is the focus in this thesis, is communication through spoken words, whereas nonverbal communication is the transformation of information through gesture and body language. One way to study verbal communication is to count the number of specific words. Linguistic Inquiry and Word Count (LIWC) is an automatic text analyzer that enables quantitative language analyses (Pennebaker & Graybeal, 2001). LIWC compares the words in text data with a background dictionary and classifies all the words into predefined categories.

The verbal communication of couples can be studied by examining the use of personal pronouns. Personal pronouns belong to a group called function words, which not bear a discrete intrinsic meaning; they only become meaningful once they are combined with other words or with a situation that is known to the speaker and listener. For example, to interpret the meaning of the word "our" in any given situation requires a mutual understanding and shared background information. The use of personal pronouns mostly occurs without conscious reflection on the part of speakers. These characteristics of personal pronouns make them an interesting subject for studying underlying processes in relationships. The use of personal pronouns by couples can reveal their view of their relationships and provide insights into the interpersonal dyadic processes of couples. Use of the personal pronouns *we*, *our*, *ours*, for example, suggests that the speaker has adopted a communal perspective. Couples' use of *we* words is related to a sense of *we*-ness and togetherness. *We* talk (use of *we* words) is mostly associated with positive relationship outcomes (Buehlman, Gottman, & Katz, 1992; Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008; Simmons, Gordon, & Chambless, 2005). The use of first-personal pronouns *I*, *me*, *mine*, and*my*, has been found to be related to self-focus, honesty, and self-disclosure (Pennebaker, Mehl, & Niederhoffer, 2003; Pennebaker & Stone, 2003). The use of second-personal pronouns *you*, *your*, and *yours*, especially in couple's discussion about a problematic subjects related to their relationship, has been found to be strongly associated with blaming (Georgiou, Black, & Narayanan, 2011). However, the role that use of you words play in support situations has not been investigated.

Previous research has shown studying the use of personal pronouns to be a promising

method to investigate between-person and within-person psychological processes. Despite this, the study of the use of personal pronouns in natural language has been relatively underutilized in the study of relationships (Pennebaker et al., 2003).

Studies on the use of personal pronouns in dyadic interaction have found controversial results (Sillars, Shellen, McIntosh, & Pomegranate, 1997; Williams-Baucom, Atkins, Sevier, Eldridge, & Christensen, 2010). Although these controversial findings might be partly related to the heterogeneity of different samples (e.g., distressed vs. non-distressed couples), they may also arise from the differing situational characteristics of the dyadic interactions studied (e.g., talking about relationship-related problems or talking about relationship-external problems). Hence, understanding the meaning of pronoun use fully also requires a consideration of the situational demands of the interactions.

1.2 Dyadic communication as a dynamic process

Dyadic communications are dynamic processes that have some characteristics of a dynamic system (Beek & Hopkins, 1992; Butler, 2011; Granic & Hollenstein, 2003). In a dyadic communication, the two tightly integrated partners (dyads) change their communication and adapt it to each other and to the context of the communication (Niederhoffer & Pennebaker, 2002; Pennebaker et al., 2003). In research however, these dynamic characteristics of dyadic communication is mostly ignored by treating communication as stable variables over time. With use of statistical models, that enable investigating temporal changes, it is possible to have a better understanding about the dyadic communication and the dyadic processes in intimate relationships (Butler, 2011; Gottman & Notarius, 2002; Gottman, Swanson, & Murray, 1999). One established method for studying couples in intimate relationships is to observe their dyadic conflict and coping interactions in lab conditions. Conflict and coping interactions occur in most intimate relationships, and how couples deal with the demands of these situations has important effects on their relationship satisfaction and stabilization. Theories (Bodenmann, 2005; Gottman, 1979) propose that dyadic conflict interaction and dyadic coping interaction are process-oriented interactions and that each interaction can be divided into chains of sequential behaviors that follow specific temporal patterns. Yet, most studies neglect these temporal changes and dyadic processes in these interactions and focus more on the overall assessment of dyadic interaction.

1.2.1 Temporal dynamics of dyadic communication

The importance of investigating the temporal trajectories of dyadic processes was noted more than three decades ago (Gottman, 1979; Margolin & Wampold, 1981; Revenstorf, Vogel, Wegener, Hahlweg, & Schindler, 1980). Common methods for investigating dyadic processes include observation of couple interactions in conflict situations and in support situations (Levenson & Gottman, 1983). Theories propose that couples' interactions follow a specific temporal pattern when they discuss a topic related to their marital problems (conflict-related) or each partner's daily stressors (support), (Bodenmann, 2005; Gottman, 1979). Gottman (1979) divides a dyadic conflict interaction into three phases: 1) agenda-building, 2) arguing, and 3) negotiating. In the first segment of this division, conflict interaction, couples clarify mutual understanding of the topic of the interaction. After partners agree on the subject, the arguin phase starts; the conflict escalates and finally de-escalates when the partners enter the negotiation phase, in which couples make mutual agreements and find solutions to the problem. Gottman (1979) suggests that, beside the overall differences between the conflict interactions of distressed and non-distressed couples, the temporal unfolding of their communication in conflict situations plays an important role in their relationship. Temporal dynamic processes have also been discussed in the context of dyadic coping interactions. In dyadic coping interaction tasks, couples are mostly asked to discuss a stressful topic that is not directly related with their intimate relationship. Bodenmann (2005) process-oriented view of dyadic coping suggests that dyadic coping interactions are divided in two main phases: self-disclosure about the stressor by one partner and efforts by the other partner to provide support. A successful dyadic coping interaction becomes more likely when both partners follow these specific patterns and adapt their coping communication to the temporal changes of the interaction. For example, a clear self-disclosure from the stressed partner can help the other partner to understand the situation better, which makes it easier to offer the best possible support.

Although theories (Bodenmann, 2005; Gottman, 1979), and and also previous findings (Gottman, 1979) to some extent show that dyadic communication in conflict and in support situations is a dyadic process with temporal changes over the course of the interactions, most previous studies have focused on overall communication and neglected the temporal dynamics of these interactions. Hence, it is important to investigate the patterns of these temporal changes in dyadic communication to see whether particular

patterns of communicative behavior are related to more favorable outcomes than others.

1.2.2 Situational dynamics of dyadic communication

The importance of situation for the occurrence of certain behaviors was first discussed in personality psychology. In a series of studies, researchers showed that specific traits lead to different behaviors depending on the situation (Mischel, 1968; Mischel, Mendoza-Denton, & Shoda, 2002; Mischel & Peake, 1982). In this view, situation is not simply a source of noise in the data but important information to be considered in the analyses. There is no single and standardized definition for "situation". In dyadic communication, a situation can be defined by time, by a specific topic, or by the role of the partner in the interaction. Situational adaptation of communication has been also studied in dyadic communication. In one study, situation has been defined as the hierarchical differences between the two interlocutors (Kacewicz, Pennebaker, Davis, Jeon, & Graesser, 2014). The effect of situation has also been studied in couples' verbal communication, more specifically in the context of couples' verbal synchrony (Ireland & Pennebaker, 2010).

As discussed in previous section 1.2.1, different temporal patterns of communication are expected depending on the situation, which can be defined by the topic of the interaction. In dyadic conflict situations, both couples discuss an issue that is directly related to their relationship. However, in dyadic coping interactions, partners are in two different situations. One partner talks about a personal stressor (stress communicator), while the other offers support (support provider). In theory, couples in each of these interactions need to adapt their communication to the situational demands if they are to have a functional and solution-oriented interaction.

1.2.3 Changes of dyadic communication over the lifespan

Intimate relationships change over the lifespan (see section 1.3.2). The subjects of dyadic interactions in intimate relationships and how individuals communicate also change over the lifespan (Harkins, 1987; Havighurst, 1948; Heckhausen, 1997; Kern et al., 2014; Lachman & James, 1997; Pennebaker & Stone, 2003; Salmela-Aro, Aunola, & Nurmi, 2007). Moreover, aging has been found to be associated with fewer interpersonal tensions (Birditt, Fingerman, & Almeida, 2005) and growing expertise in problem solving as a couple (Peter-Wight & Martin, 2011).

Studies in developmental psychology compare age-related changes in overall commu-

nication of dyads, but without considering the temporal and situational patterns of these interactions. These within-dyad processes are pivotal to the well-being and stabilization of relationships, so it is important to investigate the temporal and situational dynamics of communication over the lifespan.

1.2.4 Interim summary

Dyadic communications are dynamic processes that follow specific temporal and situational patterns. Despite the dynamic nature of dyadic communication, studies mostly focus on its overall characteristics (e.g. number of negative behaviors over the course of the interaction) in a certain situation (e.g. conflict interaction). Hence, an important aspect of dyadic communication, namely its temporal and situational dynamics, has been less studied. In developmental psychology, differences in dyadic communication have also been reported by studies that compare overall communication behavior. To our best knowledge, no studies have yet compared the dynamics of couple communication over the lifespan.

1.3 Aging and intimate dyadic relationships

1.3.1 Intimate dyadic relationships

The need to belong is one of the primary human needs. To meet this natural need, people initiate and maintain social bonds and intimate relationships (Baumeister & Leary, 1995). Intimate relationships can affect the psychological and physiological well-being of partners. In fact, marriage has been shown to be related to lower morbidity and mortality (Gordon & Rosenthal, 1995; House, K. R. Landis, Umberson, et al., 1988; Schoenborn, 2004). However, it is not simply marriage and being in a relationship that can lead to good health outcomes but being in a healthy and satisfying relationship (Coyne & DeLongis, 1986; Coyne et al., 2001; Hoppmann & Gerstorf, 2009; House et al., 1988). Hence, a great number of studies have focused on relationship satisfaction and satisfaction maintenance and stabilization over the lifespan.

1.3.2 Aging and intimate dyadic relationships

Establishing close romantic relationships is one of many developmental tasks during the transition to adulthood (Arnett, 2000; Erikson, 1982). Couples in intimate relationships

typically spend most of their adulthood from young to very old age with their partners, sharing similar environments and experiences and supporting or hampering each other. These dyadic interdependencies in intimate relationships shape the development of partners in various aspects of successful aging, well-being, health, and cognition (Hoppmann & Gerstorf, 2016). Different stages of life span involve different developmental tasks and challenges for both individuals and couples (Havighurst, 1948; Heckhausen, 1997; Salmela-Aro et al., 2007).

In early stages of relationships in early adulthood, couples are occupied with such topics as career, family planning, and finding mutual pathways in future. In middle adulthood, typical tasks for couples include parenting young children and juggling work life and private life (Lachman & James, 1997). A term that has been used to describe late middle adulthood is the "sandwiched generation", which aptly expresses the typical developmental tasks of this stage (Bengtson, Rosenthal, & Burton, 1996). Couples in the sandwiched generation face the challenges of both providing care for their children and at the same time providing care for their own parents and later dealing with the death of their parents. In late middle adulthood, couples also face the first physiological declines. On reaching old age and experiencing retirement and the "empty nest" (Harkins, 1987), couples face the challenges of losing the social status of being parents, caregivers, and active member of societ (Heckhausen, 1997). With shrinking social networks, most couples in this stage of life experience a need for physical and psychological support from their partners to overcome the challenges of daily life (Burkert, Scholz, Gralla, Roigas, & Knoll, 2011; Khan, Stephens, Franks, Rook, & Salem, 2013) and challenges related to cognitive declines (M. M. Baltes & Carstensen, 1996; Dixon, 1999; Dixon & Gould, 1998). This regulatory process of compensating and optimizing one's own physical and psychological abilities with the partner's abilities has been discussed in an extended model of selective optimization with compensation (SOC) model (M. M. Baltes & Carstensen, 1996). According to the SOC model, successful aging includes selection of personal goals based on remaining functional domains, optimizing developmental potential, and compensating for losses. Hence, dyadic processes become an important domain in the process of successful aging (for more examples see Hoppmann and Gerstorf (2016)). The importance of intimate relationships in old age has also been discussed in socio-emotional selectivity theory, which postulates that increasing age and the perception that time remaining is short lead individual goals to change and close relationships to gain importance (Carstensen, Gottman, & Levenson, 1995).

Although most people in long-term marriages have been found to be happy with their marriage (Alford-Cooper, 1998), some studies show different patterns of relationship satisfaction across the lifespan. Most of the studies on relationship processes over the lifespan compare samples of couples with high relationship satisfaction with couples in discord or distressed couples and conclude by discussing the general differences between these two groups. However, these relationship processes are dynamic processes that change over time (over minutes, days, and years), so it is important to investigate them in a range of situations. Hence, it is important to follow within-couple processes over time (minutes by minute or day by day) and study the trajectories of both within-person and within-couple changes (Hoppmann & Gerstorf, 2014, 2016).

Chapter 2

Research questions

The empirical part of this thesis includes three studies. The focus of the first study is on the temporal dynamics of dyadic verbal communication in a conflict situation. The assumption in this study is that patterns of use of certain personal pronouns (*I* words, *you* words and *we* words) change over the course of the conflict interaction, reflecting the dyadic processes of a conflict situation suggested by Gottman (1979). Gottman divides a conflict interaction into three consecutive phases of agenda-building, arguing, and negotiating. In the agenda-building phase, couples agree on the topic of the conflict interaction. In the agenda-building phase, in the beginning of the conflict interaction couples agree on the topic of the conflict interaction. As mentioned before, the use of *we* words shows the communal perspective of the couples, so it is expected that couples use higher numbers of *we* words and fewer *I* (self-disclosure) and *you* words. The arguing phase consists mainly of discussion and perspective taking about the problem, so it is assumed that couples mostly use *I* and *you* words in this phase. If couples come to a mutual agreement and enter the negotiating phase, it is expected that their use of *we* words increases again, and their use of *I* and *you* words decreases. Developmental psychologists have shown differences in communication and also in how couples handle negative interactions over the lifespan. However, to our best knowledge no study has yet focused on temporal changes in word use in conflict interactions in different age groups. Therefore, the temporal dynamics of word use over the conflict interaction are compared between young, middle-aged, and old couples.

The second study of this thesis focuses on the temporal and situational dynamics of couples' word use over the course of two dyadic coping interactions. It is expected that the temporal changes in word use by couples reflect the dyadic processes of dyadic coping interaction described by Bodenmann (2005).

In a dyadic coping interaction, each partner is in one of two different social situations, which is defined by the role of the partner in a dyadic coping interaction. One partner in the stress communicator situation, faces a problem or stressful issue that is not directly related to their intimate relationship. The stress communicator shares this stressful topic with the other partner, in the support provider situation, who listens to the first partner's issue and can offer his/her support in a variety of ways. Bodenmann (2005) suggests that dyadic coping interactions are dyadic processes that start with the

self-disclosure of the stress communicator and lead to the support provider's reaction and support-providing efforts. The assumption of this study is that pronoun use by couples follows specific patterns that align with the dyadic processes embedded in dyadic coping situations. Moreover, the temporal dynamics of pronoun use can depend on the speaker's situation (stress communicator vs. support provider). More specifically, it is expected that partners in the stress communicator situation show more self-disclosure and share their stress with their partners at the beginning of the dyadic coping interaction with higher word count, more frequent use of *I* words and more *we* words. After the self-disclosure of the stress communicator, it is expected that the partner in the support providing situation asks more questions to better understand the situation and talks more towards the end of the dyadic coping interaction. To test these assumptions, couples' use of pronouns was tested in two (2 x 8 minutes) dyadic coping interactions, in which each partner was once the stress communicator and once the support provider.

The third study of this thesis focuses on the effects of age on temporal and situational dynamics of dyadic coping interactions. As introduced in the first chapter, studies have suggested that intimate relationships and how couples deal with stressful situations change over the lifespan. However, to the best of our knowledge no study has investigated the effects of ageing on temporal and situational dynamics. The assumption is that couples gain expertise in solving their own and each other's problems with growing age. Hence, it is expected that the temporal and situational dynamics of dyadic coping interactions depend on couples' age. Specifically, it is expected that higher age is related to lower word count and more use of *we* words. As older couples bring their expertise in teamwork with their partners, it is assumed that they have a stronger sense of togetherness and *our* problem, rather than *my* issue and *your* issue, from the beginning of the interaction. Moreover, it is expected that higher age is related to fewer variabilities over the course of the interaction, since ageing is generally associated with less reactivity in negative interactions. To test these assumptions, observations of couples' (age range 20- 80 years) communication were investigated in two (2 x 8-minute) dyadic coping interactions in which both partners in which each partner was once the stress communicator and once the support provider.

Chapter 3

General Method PASEZ Project

PASEZ "Partnerschaft und Stress: Entwicklung über die Lebensspanne" is a collaboration of three different labs of the Department of Psychology at the University of Zurich. This project is funded by the Swiss National Science Foundation and administered by chair of Gerontopsychology and Gerontology, chair of Clinical Psychology for Children/Adolescents and Couples/Families and chair of Psychology of Motivation, Volition, and Emotion. The main focus in this project is to investigate relationship functioning and stability over the lifespan. A total of 368 couples, from three different age groups were recruited and participated in the first data collection. The first age group included couples aged 20-35 years, the second age group included couples aged 40-55 years and the last and oldest age group included couples aged 65-80 years. PASEZ follows these couples for a total of five years to be able to investigate longitudinal research questions. By the beginning of the data collection couples were at least for one year in a relationship. For recruiting couples, we advertised the study in newspapers, Television, and on the radio. Participants were asked to fill out part of the questionnaires at home (e.g., demographics, personality, attitudes). In the lab session, first couples had to fill out a second part of questionnaires (e.g., goals, commitment, level of stress, personality). After filling out the questionnaires participants were asked to interact about three different subjects (3x8-minutes interaction) and these interactions were video recorded for further analyses. One of these three interactions was about a conflict related subject and the two other interactions were about an external stressful subject (once for male partner and the other time for female partner). In this thesis only the collected data of the first wave of data collection is used. Collecting these data in the first wave required 2.5 to 3 hours. Ethic committee of University of Zurich approved the procedure of PASEZ study.

For the studies of these thesis video recordings of conflict interaction and 2x dyadic coping interaction are used. Trained research assistants transcribed videos from German and Swiss-German dialect to written German. These transcriptions were analyzed using the software "Linguistic Inquiry and Word Count" (LIWC) (Pennebaker, Booth, & Francis, 2007) based on the German dictionary (Wolf et al., 2008).

Chapter 4

Studies

4.1 Study 1: Monitoring Pronouns in Conflicts: Temporal Dynamics of Verbal Communication in Couples across the Lifespan[1]

4.1.1 Abstract

Conflict communication represents a basic process for the quality of intimate relationships, which is fundamental to well-being over the lifespan. This study investigates the temporal unfolding of different relational perspectives during a conflict situation by monitoring pronoun use in young, middle-aged, and old couples within the theoretical framework of Gottman's phases of conflict. Our results reveal different trajectories of "I"-, "you"-, and "we"-talk over a conflict conversation in both partners. These trajectories differ between females and males. Furthermore, "you"-talk and "we"-talk differed among the age groups over time. Understanding the temporal dynamics of marital communication as reflected by pronoun use seems promising for a better understanding of conflict related processes in couples over the lifespan.

4.1.2 Introduction

Close relationships are one of the central domains for maintenance of well-being and health across the lifespan (Ryff, 1989; Tobin, Slatcher, & Robles, 2013). An intimate relationship is the most important interpersonal relationships in adulthood. In fact, living in a stable and happy relationship is related to both the physical and mental health of couples (Choi, Yorgason, & Johnson, 2016; Robles, Slatcher, Trombello, & McGinn, 2014; Xu, Thomas, & Umberson, 2015).

Couple conflict communication over the lifespan

The changing role of social relationships, including the relationship to one's spouse as couples age, has been discussed (Carstensen, 1992). With increasing age, which is in many cases related to declining physical abilities and loss of social contacts through retirement

[1] A similar version of this chapter has been published in The Journal of Gerontopsychology and Geriatric Psychiatry (Neysari et al., 2016).

and death of close friends, relationship partners are likely to become an increasingly important source of support. Thus, with increasing age, higher abilities in regulating own and partner's emotions (Fingerman & Charles, 2010), problem-solving skills (Blanchard-Fields, Jahnke, & Camp, 1995), and functional dyadic coping (M. Landis et al., 2014, 2013)) may play important roles in stabilizing the relationship quality. In conflict situations old couples report less intensive negative emotions and more positive affection than middle-aged couples (Carstensen et al., 1995; Levenson, Carstensen, & Gottman, 1993; Smith et al., 2009). Compared to young adults, they experience less stress, are less likely to argue, and tend to do nothing when experiencing interpersonal tensions (Birditt et al., 2005). These findings are in line with socio-emotional selectivity theory, which states that, with increasing age, people actively avoid negative emotional experiences by controlling the emotional course of interpersonal interactions (Carstensen, 1992, 1993).

Accordingly, in a study old individuals displayed more avoidance motivation in their interpersonal relationships than younger adults, particularly avoiding socially distressing situations (Nikitin, Schoch, & Freund, 2014). However, they did not show less approach motivation than younger adults, which indicates a balance between avoidance and approach motivation. Group comparisons between young, middle-aged, and old individuals support this finding that, overall, there are fewer interpersonal tensions in old age (Birditt et al., 2005). However, when old individuals do report interpersonal tensions in daily life, they report more often tensions with their spouse than with other family members (Birditt et al., 2005). The authors argue that overall older adults show less reactive behavior to interpersonal tensions and are more likely to show passive constructive behavior (Birditt et al., 2005).

In general, communication between couples in standardized conflict situations (Coan & Gottman, 2007) was found to be an important predictor of the maintenance of their relationship, i.e., dysfunctional conflict behaviors predict relationship dissolution (Christensen & Shenk, 1991; Cramer, 2000; Gottman, Coan, Carrere, & Swanson, 1998). It is worthwhile to mention that stability of relationship is not necessarily good for well-being, and that maintenance of relationship in discord is detrimental to health over the lifespan (Newsom, Mahan, Rook, & Krause, 2008). Differences between satisfied couples and couples in discord are supposed to be most evident when couples resolve conflicts (Gottman, 1979). In this context, numerous studies have suggested gender differences (Carstensen et al., 1995; Christensen & Shenk, 1991; Heavey, Layne, & Christensen, 1993). These studies showed that women are more confrontational, more expressive emotionally in general,

and accordingly express also more negative affect. In contrast, men tended to be more defensive, showed more withdrawal and more de-escalation behavior. The authors conclude from their analyses that these gender differences are maintained across the lifespan (Carstensen et al., 1995).

In his description of couple conflict interactions, Gottman (1979) suggests there are temporal dynamics of conflict communication, and that the conflict communication can be divided in the three phases of agenda: building, arguing phase, and negotiation phase. According to this model, the agenda-building phase is characterized by expressing feelings and mind-reading. The task of this first phase of the conflict interaction is to define the problem for the consecutive discussion. The second phase, the arguing phase, is characterized by open disagreement and summarizing the standpoints of each partner. The task of this phase is airing disagreement and exploring common ground in opinions and feelings regarding the underlying problem. The conflict interaction then ends with the negotiation phase, which is characterized by information exchange, problem solving, agreement, and summarizing points of view of both partners. A successful negotiation phase leads to a mutually satisfying agreement on how to solve the problem. In comparison, distressed couples are supposed to continue repeating themselves and getting in counter-proposal patterns instead of finding a mutual satisfying solution and recovering from the conflict (Gottman, 1979).

Monitoring pronoun use

Recently it was proposed that the words individuals use reflect psychological processes of interest (Pennebaker & Graybeal, 2001). The proportion of relational or personal pronouns in language samples are of particular interest here (Pennebaker et al., 2003). Relational pronouns are supposed to mirror the relationship of the self to the other, vary as a function of adapting perception about the relationships, and reveal couple-related psychological processes (Pennebaker et al., 2003). "I"-words such as "I," "mine," or "my" stand for expressing own thoughts and feelings, and stand for self-focused focused way of thinking. "I"-words were also found to be related with higher rates of suicidality in individuals (Pennebaker & Stone, 2003; Stirman & Pennebaker, 2001). When individuals experience physical or emotional pain, they use more "I"-words, which reflects a switch of attention toward themselves (Rude, Gortner, & Pennebaker, 2004). Findings related to "I"-talk are not consistent in the relationship context. In couple conflict situations, the use of "I"-words was found to be related to more separateness in couples and to

negative emotional behaviors (Sillars et al., 1997). However, a study including couples in discord (Williams-Baucom et al., 2010) observed diverging correlates of "I"-talk: "I"-talk was related to more satisfaction in couples in discord, whereas in satisfied couples it was associated with more dissatisfaction. Accordingly, "I"-use during couple therapy for treating alcohol problems was related to worse outcome (Rentscher, Soriano, Rohrbaugh, Shoham, & Mehl, 2015). In contrast, during coping conversations, greater use of "I"-words by a spouse was related to better health improvement of the patients, while greater use of "I"-talk by the patients was related to problematic demand/withdraw interaction patterns (Rentscher, Rohrbaugh, Shoham, & Mehl, 2013).

To sum up, "I" use in couple interactions seems to be related with self-disclosure, which can be functional or dysfunctional. Current literature suggests that in satisfied couples "I"-use in standardized conflict situations might reflect being expressive about negative feelings and possibly demand patterns (Sillars et al., 1997; Williams-Baucom et al., 2010).

The use of "You"-words such as "you" and "yours" in couple and family conversations has been linked with the notion of separateness, distancing, arguing, and blaming (Georgiou et al., 2011). It was found to be related to less family adjustment (Robbins, Mehl, Smith, & Weihs, 2013), less marital satisfaction in middle-aged/old couples and in young couples (Sillars et al., 1997; Slatcher, Vazire, & Pennebaker, 2008), and more negative behaviors in marital interactions (Simmons et al., 2005). Thus, "you"-talk in conflict situations seems to be an indicator of confrontational communication behaviors. In contrast, "we"- words such as "we," "our," or "ours" are found to reflect togetherness, "we"-ness, and a communal orientation (Pennebaker & Lay, 2002). "We"-talk in couples was related to higher commitment (Agnew, Van Lange, Rusbult, & Langston, 1998), positive changes of symptoms in patients with heart failure (Rohrbaugh et al., 2008), better health-related behavior in patients with problematic alcohol use (Rentscher et al., 2015) and in smokers with lung problems (Rohrbaugh, Shoham, Skoyen, Jensen, & Mehl, 2012), better dyadic adjustment in couples (Robbins et al., 2013), and more positive solutions when discussing the top issue facing their relationship (Simmons et al., 2005). "We"-talk has been studied in conflict situations and found to be related to less negative emotion in middle-aged and old couples (Seider, Hirschberger, Nelson, & Levenson, 2009). It was also related to high relationship satisfaction in couples (Sillars et al., 1997). However, in Seider et al. (2009), "we"-talk of the spouses was not related to the relationship satisfaction of couples.

The use of relational pronouns has also been studied in different age groups by applying

a lifespan perspective. Results of these studies show differences between middle-aged and old couples in "we"-talk in conflict conversations: Older couples used more "we"-words in a conflict situation than middle-aged couples (Seider et al., 2009; Sillars et al., 1997). A comparison of writing examples of individuals between 8 and 85 years and a comparison of the Facebook updates of individuals between 13 and 64 years reveal that, in general, older age is related to less "I"-talk (Kern et al., 2014; Pennebaker & Stone, 2003). The finding that "we" might replace "I" in old age agrees with socio-emotional selectivity theory and might reflect a motivational shift that directs attention to emotionally meaningful goals as a result of limited time, in this case the cohesion and togetherness in the romantic relationship. Existing social relationships become more important, and even though the actual size of the social network of older people becomes smaller, these close relationships tend to have higher relationship quality (Carstensen, 2006; Lang & Carstensen, 1994).

Moreover, gender differences have been observed in the context of language use (Mehl & Pennebaker, 2003; Mulac, Bradac, & Gibbons, 2001; Newman, Groom, Handelman, & Pennebaker, 2008; Pennebaker et al., 2003). In general, findings show that women use more "I" in their language, and that their language is more direct, elaborated, and affective (Mehl & Pennebaker, 2003; Newman et al., 2008).

Studies comparing male and female language use reveal controversial findings, which is most probably because of the heterogeneity of the language samples used. More specifically, so far no gender differences have been observed in couple conflict conversations (Sillars et al., 1997; Williams-Baucom et al., 2010), except for one study (Seider et al., 2009), which showed an increased use of "you" in women.

In summary, monitoring the use of personal pronouns in conflict conversations of couples is a promising indicator of relevant psychological processes that might differ between men and women and between age groups. Conceptually, the importance of the temporal dynamics within couple conflict conversation has long been underlined (Gottman, 1979). However, to our knowledge, no study so far has empirically investigated this suggested temporal unfolding within a conflict situation applying a micro-analytical perspective to the established conflict conversation paradigm (Gottman, 1979). In addition, it is an open question whether there are age differences among young, middle-aged, and old adults regarding these trajectories of changes in use of personal pronouns within couple conflict conversations.

The Current Study

This study investigates the temporal dynamics of use of personal pronoun by couples in a conflict interaction. It is assumed that the changes in use of pronouns "I," "you," and "we" reflect Gottman's three phases of conflict interaction (Gottman, 1979). In the first phase (*agenda building*), couples define the topic of the conflict interaction task and should be using "we"-statements frequently. In the second phase (*arguing*), partners express their thoughts and feelings, so that we expect a frequent use of "I"-statements reflecting emotional and problem-oriented disclosure. In the third phase (*negotiation*), again we expect more frequent use of "we"-statements reflecting the communal focus. Thus, we expect a u-shaped form representing the use of "we"-statements and an inverse u-shaped form representing the use of "I"-statements.

The use of the "you"-statements should decline constantly over the 8 minutes of the conflict interaction. Gottman's theory suggests that, in prototypical couple conflicts, the confronting nature declines over the conflict conversation, leading to an at least temporary reduction in the tension at the end of a conflict. Figure 4.1 illustrates our assumptions about the hypothetical temporal dynamics of pronoun use in conflict situation of couples. The assumptions rely on a continuous view of sequences and imply a u-shaped trajectory of "we," an inversed u-shaped trajectory of "I," and negative slope of "you" over time.

Because of the previous findings for gender differences in conflict interaction (Carstensen et al., 1995; Christensen & Shenk, 1991; Heavey et al., 1993) and verbal communication (Mehl & Pennebaker, 2003; Mulac et al., 2001; Newman et al., 2008; Pennebaker et al., 2003), we assumed different pathways of change for male and female participants.

In line with previous findings exploring age-group differences (Pennebaker & Stone, 2003; Seider et al., 2009; Sillars et al., 1997), we expect general age differences in the use of "we"-, "I"-, and "you"-words. Considering that aging is related to more avoidance of negative emotion in close relationships (Carstensen et al., 1995; Nikitin et al., 2014), we expect that old couples use fewer "you"-words, reflecting less blaming and arguing in the conflict situation. Furthermore, with the growing importance of close relationships in old age (Carstensen, 2006) and with increasing shared identity among old couples (Sillars et al., 1997), greater use of "we"-words with increasing age is expected. So far, no studies have investigated the dynamics of verbal communication over time in young, middle-aged, and old-aged groups. We expected that the temporal unfolding of pronouns during conflict conversation possibly also might reflect the known tendency to avoid negative emotions

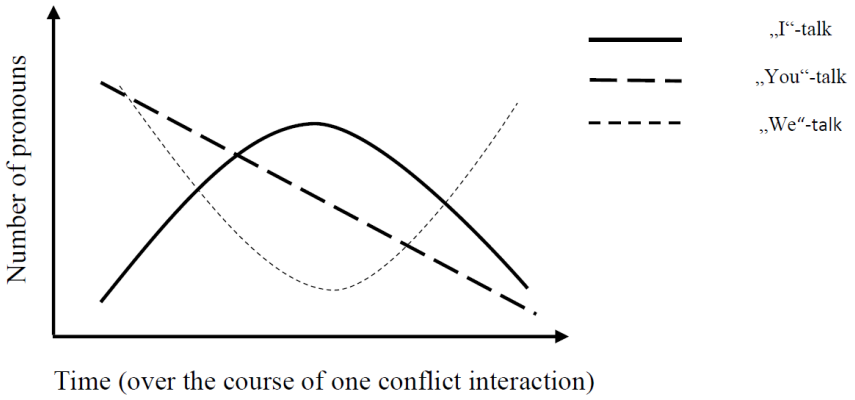

Figure 4.1: Hypothetical temporal dynamics of "I"-talk, "you"-talk, and "we"-talk over the course of a conflict interactions.

and be less involved in the conflict conversation. Because this is the first work to study trajectories of pronoun use, the testing of age differences is of exploratory nature.

4.1.3 Method

The present study is part of a larger research project on the impact of stress on relationship development of couples and children across the lifespan.

Participants

The final sample consisted of 368 heterosexual couples. Couples from three different age groups were recruited: (1) 20 to 35 years, (2) 40 to 55 years, and (3) 65 to 80 years. After exclusion of 4 couples from our data set because of missing data, our sample included $N = 121$ young, $N = 124$ middle-aged, and N = 119 old couples. Of the remaining 364 couples, 240 couples were married (58% in first marriage and 8% in second marriage) and 237 had children (65.1%). Mean relationship duration was 21.06 years (minimum 1 year and maximum 60 years) and relationship duration was highly correlated with participants' age (for female participants $r = 0.88$, $p < .001$ and for male participants $r = 0.86$, $p < .001$). Mean age difference between male and female partners was 2.68 years (minimum 0, maximum 11 years) for young couples, 3.40 years (minimum 0, maximum 15 years) for middle-aged couples and 2.70 years (minimum 0, maximum 14) for old couples. Our sample represented relatively highly satisfied couples with $M = 4.33$, ($SD = .50$) for female partners and $M = 4.38$ ($SD = .47$) on the 5-point scale of the German Version of the Relationships Assessment Scale (RAS) (Hendrick, 1988; Sander & Böcker, 1993).

Table 4.1: Demographic characteristics of the participants

	Young ($N = 121$)		Middle-age ($N = 124$)		Old ($N = 119$)	
	Female	Male	Female	Male	Female	Male
Relationship duration, $M(SD)$	4.65 (3.53)		18.15 (9.61)		42.59 (12.89)	
Marital Status						
Not married	72.1%		6.4%		0.0%	
Engaged	2.5%		0.8%		0.0%	
Married	23.8%		72.8%		76.9%	
2nd Marriage	.08%		8.0%		14.9%	
Children	10.0%		44.8%		45.2%	
Living situation						
Living alone	10.7%		1.6%		1.7%	
Cohabiting with partner	55.7%		87.1%		94.9%	
Shared-flat + partner	7.4%		5.6%		2.5%	
Shared flat	13.1%		0.8%		0.8%	
Other	13.1%		4.8%		0.0%	
Education						
Primary School	0.0%	0.8%	0.0%	0.0%	7.6%	3.3%
Secondary	3.3%	1.6%	1.6%	0.8%	6.7%	3.3%
Commercial	25.6%	31.1%	46.4%	34.7%	49.6%	38.8%
High school	25.6%	23.8%	20.0%	5.6%	18.5%	8.3%
University	45.5%	42.6%	32.0%	58.9%	17.6%	46.3%

Detailed demographic information of the participants is listed in Table 4.1.

Procedure

This project was advertised in newspapers and on the radio as a study on the impact of stress on relationship development of couples. Couples who were interested in participating were contacted and informed about the procedure of the study. If couples were interested and agreed to participate, they completed the questionnaires independently from each other at home and brought the questionnaires to the laboratory. At the laboratory, both partners provided informed consent and were then escorted to separate rooms where they filled in two additional sets of questionnaires. Couples had to go through three videotaped interaction tasks: one standard conflict interaction task and two tasks of mutual support. For the purpose of this study, data from the standard conflict interaction task are used.

Conflict interaction task We used the conflict interaction task introduced by Levenson and Gottman (1983). For the conflict interaction, both partners identified a source of tension in their relationship that they would like to discuss with each other. To help partners identify primary areas of couple immanent stress, a list of most common problem areas was used (Problem Areas Questionnaire, PAQ A) (Heavey, Christensen, & Mala-

Table 4.2: Descriptive statistics of word count, "I"-words, "you"-words, "we"-words over the conflict conversation (duration in total 8 minutes)

		1 min. M (SD)	2 min. M (SD)	3 min. M (SD)	4 min. M (SD)	5 min. M (SD)	6 min. M (SD)	7 min. M (SD)	8 min. M (SD)	Overall M (SD)
WC	Male	70.79 (33.56)	74.05 (36.39)	77.72 (36.30)	80.76 (36.50)	76.38 (38.50)	77.80 (37.20)	75.28 (37.63)	76.56 (38.74)	76.15 (22.66)
	Female	72.51 (37.34)	85.18 (41.04)	85.29 (41.15)	81.79 (40.82)	84.62 (41.02)	83.88 (42.27)	82.87 (39.32)	74.43 (40.48)	81.33 (25.33)
"I"	Male	5.80 (4.05)	5.63 (4.08)	5.57 (4.11)	5.79 (4.10)	5.85 (4.17)	5.43 (3.82)	5.46 (4.24)	5.19 (4.02)	5.59 (2.35)
	Female	5.73 (3.99)	6.06 (4.22)	6.16 (4.14)	6.52 (3.93)	6.15 (4.04)	6.10 (4.03)	5.93 (3.78)	5.41 (4.06)	6.01 (2.24)
"You"	Male	3.57 (3.32)	3.19 (2.98)	3.13 (3.33)	3.24 (3.01)	3.34 (3.25)	3.13 (3.27)	2.68 (2.81)	3.02 (3.17)	3.16 (1.69)
	Female	4.35 (3.94)	4.18 (3.99)	3.92 (3.35)	3.61 (3.19)	3.85 (3.31)	3.67 (3.25)	3.65 (3.37)	3.61 (3.40)	3.85 (1.90)
"We"	Male	2.12 (2.67)	1.58 (2.42)	1.51 (2.16)	1.67 (2.67)	1.55 (2.32)	1.65 (2.21)	1.71 (2.55)	1.74 (2.46)	1.69 (1.21)
	Female	1.86 (2.36)	1.52 (2.07)	1.50 (2.06)	1.43 (2.16)	1.33 (1.90)	1.65 (2.52)	1.50 (2.24)	1.78 (2.57)	1.57 (1.11)

Note. WC: word count, "I": percentage of first-person singular pronouns, "You": percentage of second-person singular pronouns, "We": percentage of first-person plural pronouns.

muth, 1995). Partners separately rated how stressed they are with respect to the 13 areas of the PAQ A (e.g., communication with the partner, sexuality, finances, children, or annoying habits of the partner) on a 4-point scale. Additionally, participants were allowed to freely add three additional areas. In order to identify the topic of their stress communication task, the couple had to choose one issue from the PAQ A that either caused high tension for both partners or caused high tension in one but not in the other partner. Participants were then left alone and asked to discuss this relationship- relevant issue for 8 minutes while being videotaped. The most frequently discussed topic of discussion in young couples was "annoying habits of partner" ($N = 17$, 14%, stressfulness of the topic $M = 1.60$, $SD = 0.96$) followed by "leisure time" ($N = 16$, 13.2%, stressfulness of the topic $M = 1.80$, $SD = 0.68$) in middle-aged couples, "childcare and parenting" ($N = 23$, 18.5%, stressfulness of the topic $M = 2.20$, $SD = 0.99$), followed by "communication with the partner" ($N = 21$, 16.9%, stressfulness of the topic $M = 1.93$, $SD = 0.97$) and in old couples "communication with the partner" ($N = 19$, 16.1%, stressfulness of the topic $M = 1.83$, $SD = 0.78$) followed by "leisure time" ($N = 15$, 12.7%, stressfulness of the topic $M = 1.64$, $SD = 0.71$). Male and female partners did not differ regarding the degree of the stress related to the discussed topic ($t(361) = 0.749$, $p = .454$). There was a significant group difference between the average degree of the stress related to discussed

topic for young, middle-aged and old couples $F(2, 364) = 6.83$, $p < .001$. For old couples the topic of the conflict interaction was significantly less stressful than for young and middle-aged couples.

Verbal communication A team of trained research assistants transcribed the conflict interactions from standard and Swiss-German dialect into standard written German. These transcriptions were analyzed using the software "Linguistic Inquiry and Word Count" (LIWC) (Pennebaker et al., 2007) based on the German dictionary (Wolf et al., 2008). LIWC is a software for quantitative text analysis with a series of built-in dictionaries. Counting each word and sorting it to the respective linguistic categories of its dictionary, LIWC gives the percentage of each word category in relation to the total word count. LIWC has an option that enables segmentation of a text, to give the percentage of each word category in a specific segment defined by the user. For this study, we analyzed the transcriptions of the conflict interaction in 1-minute segments (for 8 minutes of conflict interaction we had 8 time segments). One of the LIWC categories is "personal pronouns," which is divided in "I," "you," "we," and "other". The word category "I" includes personal pronouns relate to self (me, my, mine), "you" includes pronouns "you," "yours," and "we" includes "our," "ours," "we," and "us". Descriptive statistics of pronouns use is summarized in Table 4.2. To be able to investigate temporal trajectories of pronoun use the transcriptions were divided into eight 1-minute sequences.

Data analysis

The dataset consisted of 364(couples) x 2(persons) x 8(sequences) = 5824 observations. For our analyses we used a multilevel model for dyadic data that treats the three levels of distinguishable dyadic data (time nested within persons nested within couples) as two - instead of three - levels of random variation. Level 1 thereby represents variability due to within person repeated measures for male partners and female partners, and level 2 represents between-couples variability across male partners and across female partners; this is called a *double-entry* or double-intercept solution, see (Laurenceau & Bolger, 2005; Raudenbush, Brennan, & Barnett, 1995) for more details. The double-entry solution represents the state-of-the-art treatment of longitudinal dyadic data as this solution allows the female and male slopes to co-vary and thus considers mutual inter-dependencies in the dyad over time. However, the double-entry solution does not allow to explicitly test gender-specific effects. Thus, following the recommendations by Kenny, Kashy, and Cook

(2006), conjoint *single-entry* models with dummy-coded gender variables were estimated to explicitly test for gender differences. The models were estimated in R (version 3.0.1; R-Core-Team, 2013) using the lme4 package (Bates, Maechler, Bolker, Walker, et al., 2013).

To test our hypotheses we modeled the change in pronoun use over the course of the eight sequences introducing a variable *time*, which represents the number of the sequences. Time was centered at the first sequence of the conflict interaction such that time ranged from 0 to 7. In all models we tested for linear and quadratic effects of time using orthogonal polynomials (*timeQ*). The effects of time on pronoun use were first tested separately for female and male spouses using the double-entry method. Second, *gender* differences were tested relying on a single-entry method with adding interaction effects with a dummy- coded gender variable ($0 = female$, $1 = male$). Further, we tested for age-group differences in the use of pronouns by adding two dummy-coded variables to the models (double-entry solution). The dummy-coded variables were defined as ($ageYM : 0 = young$ and $1 = middle - aged$, $ageYO : 0 = young$ and $1 = old$).

Double entry models were specified as follows: Equations 4.1 and 4.2 represent the models testing for the linear and quadratic effects of time on pronoun use separately for male and female partners. Equations 4.3 to 4.8 represent models testing for age group differences in the overall use of pronoun (4.3 and 4.4), as well as for age group differences in linear (4.5 and 4.6) and quadratic trends (4.7 and 4.8) over time.

$$YM_{ij} = \beta_{0jM} + \beta_{1jM}(time_{ij}) + \beta_{2jM}(timeQ_{ij}) + \epsilon M_{ij} \tag{4.1}$$

$$YF_{ij} = \beta_{0jF} + \beta_{1jF}(time_{ij}) + \beta_{2jM}(timeQ_{ij}) + \epsilon F_{ij} \tag{4.2}$$

$$\beta_{0jM} = \gamma_{00M} + \gamma_{01M}(ageYM_{jM}) + \gamma_{02M}(ageYO_{jM}) + \mu_{0jM} \tag{4.3}$$

$$\beta_{0jF} = \gamma_{00F} + \gamma_{01F}(ageYM_{jF}) + \gamma_{02F}(ageYO_{jF}) + \mu_{0jF} \tag{4.4}$$

$$\beta_{1jM} = \gamma_{10M} + \gamma_{11M}(ageYM_{jM}) + \gamma_{12M}(ageYO_{jM}) \tag{4.5}$$

$$\beta_{1jF} = \gamma_{10F} + \gamma_{11F}(ageYM_{jF}) + \gamma_{12F}(ageYO_{jF}) \tag{4.6}$$

$$\beta_{2jM} = \gamma_{20M} + \gamma_{21M}(ageYM_{jM}) + \gamma_{22M}(ageYO_{jM}) \tag{4.7}$$

$$\beta_{2jF} = \gamma_{20F} + \gamma_{21F}(ageYM_{jF}) + \gamma_{22F}(ageYO_{jF}) \tag{4.8}$$

4.1.4 Results

Use of relational pronouns over time In a first step we tested whether use of "I"-words, "you"-words, and "we"-words changed over the 8-minute conflict interaction. The results of our models are summarized in Table 4.3. The intercept of the models represents the sum of pronouns used within the first sequence (when *time* is coded as 0) for men and women. Linear and quadratic slopes indicate the trend of pronoun use over time.

"I"-talk. In the first model (see Table 4.3) we predicted the use of the pronoun "I" by a separate linear and quadratic time polynomial for men and women. There was a significant quadratic effect of time on use of singular personal pronouns by female partners. The negative slope of quadratic effect of time indicates that the change of female "I"-talk over the 8-minute of conflict interaction has an inversed u-shape. Neither the linear nor the quadratic effect of time was significant for male partners, although they showed a similar trend for a quadratic effect of time. Next, in order to test gender differences, we applied the single-entry method adding interactions with a dummy-coded gender variable. Results of the single-entry method showed a significant gender difference in use of "I"-talk, $b = 0.418$, $p = .007$, indicating that women overall used more "I" during the 8-minute interaction. Further, the significant *gender x time* (quadratic) interaction confirmed gender difference of change of "I"-talk over time between male and female partners, $b = 14.438$, $p = .043$. There was no significant interaction for the linear time trend, $b = 4.41$, $p = .54$. Results suggest that female spouses have a decreased use of "I" in the beginning and end phase of the discussion. For men this pattern of change in "I"-talk over time was less pronounced and not significant.

"You"-talk. In line with our hypothesis there was a significant linear effect of time on "you"-talk. For both male and female participants, "you"-talk declined over the course

Table 4.3: Results from multilevel models predicting linear and quadratic trends in the use of relational pronouns "I", "we" and "you" words in distinguishable dyads.

	Model Estimate (SE)		
	"I"	"You"	"We"
Fixed Effects			
Intercept			
Women	5.821(0.15)***	3.961 (0.13)***	1.555(0.08)***
Man	5.779 (0.16)***	3.057 (.012)***	1.708(0.09)***
Time Linear (within)			
Women	4.418 (5.97)	21.978(4.99)***	6.802 (3.61)#
Man	8.265 (5.97)	14.079(4.99)**	9.117 (3.61)*
Time Quadratic (within)			
Women	18.495 (4.43)***	6.200 (3.70)#	9.642 (2.68)**
Man	5.831 (4.43)	0.522 (3.70)	8.530 (2.68)**
Random Effects			
Intercept (SD)			
Women	1.842	1.582	0.811
Man	1.978	1.315	0.933
-2 log likelihood	32196.4	29975.86	25962.94
AIC	32216.39	29995.86	25982.93
BIC	32283.09	30062.54	26049.62

Note. Standard errors are in parentheses. AIC = Akaike information criteria; BIC = Bayesian information criteria. #$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

of the interaction as indicated by the negative estimate for time (see Table 4.3). The subsequent single-entry model showed a significant gender difference in use of "you" pronouns, $b = 0.694$, $p < .001$, indicating that women overall used more "you". However, there were no significant differences in linear nor in quadratic changes of "you"-talk over time between male and female partners, $b = 4.07$, $p = .496$ and $b = 6.47$, $p = .279$, respectively.

"We"-talk. Linear and quadratic effects of time on "we"-talk were significant for both male and female partners. Significant positive quadratic effects of time on "we"-talk for both partners confirmed a u-shaped change of "we"-talk during the conflict interaction, indicating that females and males used "we" more at the beginning and end of the interaction. Results of the single entry method revealed that men used overall more "we"-talk than women, $b = 0.12$, $p = .046$. However, there were no significant *gender x time* interactions, $b = 2.90$, $p = .501$ (linear), and $b = 1.26$, $p = .769$ (quadratic), indicating that men and women did not differ in the changes of "we"-talk over the course of the interaction.

Age group differences In a further step, we compared the use of "I"-talk, "you"-talk, and "we"-talk and their linear and quadratic trajectories over time between young, middle-aged, and old couples.

Table 4.4: Results from multilevel models predicting linear and quadratic trends in the use of relational pronouns "I", "we" and "you" words in in young, middle-aged and old dyads.

	Model Estimate (SE)		
	"I"	"You"	"We"
Fixed Effects			
Intercept			
Women	5.988 (0.27)***	4.595 (0.22)***	1.501 (0.15)***
Man	6.420 (0.27)***	3.384 (0.21)***	1.579 (0.15)***
Time Linear (within)			
Women	6.92 (10.35)	16.252 (8.66)#	15.758 (6.25)*
Man	17.902 (10.35)#	2.611 (8.66)	10.346 (6.25)#
Time Quadratic (within)			
Women	19.166 (7.68)*	3.372 (6.43)	6.114 (4.64)
Man	1.114 (7.68)	5.920 (6.41)	17.027 (4.64)**
Age group middle			
Women	0.311 (0.33)	0.614 (0.28)*	0.132 (0.18)
Man	0. 644 (0.34)#	0.412 (0.26)	0.093 (0.19)
Age group old			
Women	0.55 (0.33)	0.705 (0.28)*	0.129 (0.18)
Man	1.204 (0.34)**	0.363 (0.26)	0.089 (0.19)
Time linear x Age middle			
Women	7.962 (14.55)	5.052 (12.17)	14.893 (8.78)#
Man	25.289 (14.55)#	21.274 (12.17)#	7.848 (8.78)
Time linear x Age old			
Women	15.941 (14.70)	12.250 (12.30)	11.889 (8.88)
Man	3.125 (14.70)	28.900 (12.30)*	11.949 (8.88)
Time quadratic x Age middle			
Women	8.214 (10.79)	1.076 (9.03)	6.580 (6.52)
Man	12.563 (10.79)	3.242 (9.03)	10.601 (6.52)
Time quadratic x Age old			
Women	10.615 (10.91)	6.611(9.13)	3.948 (6.59)
Man	1.337 (10.91)	16.290 (9.13)#	14.939 (6.59)*
Random Effects			
Intercept (SD)			
Women	1.816	1.540	0.805
Man	1.918	1.276	0.926
-2 log likelihood	32168.26	29943.14	25939.12
AIC	32358.99	29987.13	25983.11
BIC	32212.26	30133.83	26129.83

Note. Standard errors are in parentheses. AIC = Akaike information criteria; BIC = Bayesian information criteria. Reference category for age group differences is the young group. #$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

"I"-talk. The results of the first set of models comparing the linear and quadratic trajectories are summarized in Table 4.4. Among men, the difference was marginal significant comparing young and middle-aged men and significant comparing young and old men, indicating that older men used "I" less often than young men and middle-aged men showing similar trends (marginal significant). Women showed the same trend as men, but the differences between age groups in the overall use of "I" were not significant. Interaction effects between age group and trends over time were not significant, indicating that there were no significant differences between age groups in the linear and quadratic trend of "I"-talk over the course of the conflict.

"You"-talk. As displayed in Table 4.4, for female partners there was a significant main effect of age group on "you"-talk. Middle-aged and old female partners used "you"-words less often than young female partners. For differences in trajectories we found significant linear time by age group interactions for men, indicating that young men showed less of a linear decrease in the use of "you" compared to old men. Similar trend (marginal) was found for time by age group interactions comparing middle-aged and young men. Among women trajectories did not differ between age groups.

"We"-talk. We did not find any significant effect of age group on the overall use of the pronoun "we". Further, the effect of age groups on trajectories were only significant for quadratic effect of time on "we"-talk by the oldest male partners, $b = 14.94$, $se = 6.59$, $p = .023$, indicating that the quadratic trend was stronger among young men, compared to older men (see Figure 4.2). However, the difference in the quadratic trend failed to reach significance comparing young men to middle-aged men. For women all age group by time interactions were non-significant, indicating that quadratic trajectories did not differ between age groups.

4.1.5 Discussion

The present study examined the temporal dynamics of personal pronoun use in 364 young, middle-aged, and old couples over the course of an 8-minute conflict interaction.We hypothesized that "I," "you," and "we"-talk during the conflict interaction would reflect the theoretical implications of the conflict interaction framework (Gottman, 1979), namely, the three phases: agenda-building, arguing, and negotiation. Because previous studies reported gender differences in couples' conflict communication (Carstensen et al., 1995;

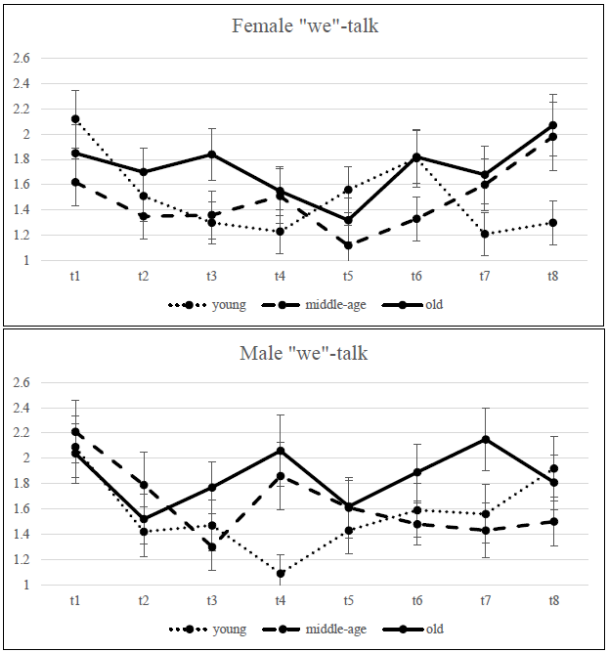

Figure 4.2: "We"-talk of young, middle-aged and old male and female partners across the conflict interaction.

Christensen & Shenk, 1991; Heavey et al., 1993), we tested the gender differences in the use of relational pronouns. In the same vein, age differences were reported in conceptually related research (Kern et al., 2014; Pennebaker & Stone, 2003), which we also tested in additional analyses.

We hypothesized that the trajectory of "I"-use follows an inverted u-shape pattern, reaching its peaks during the "argue phase" of the conflict interaction, reflecting arguing and expressing one's own negative as well as positive thoughts and emotions. For all age groups, "I"-talk showed an inverted u-shape trajectory over time. However, the quadratic effect of "I"-talk was significant only for female partners. In general, female partners used more "I"-words than their male partners. "I" use has been linked with a self-focused perspective and the expression of own thoughts and emotions, negative as well as positive ones. These results correspond to more general studies examining language use where women tend to use more "I"-talk (Mehl & Pennebaker, 2003; Newman et al., 2008). This is also in line with findings that women engage more in disclosure of deeper thoughts and feelings (Dindia & Allen, 1992) and rely more on coping strategies involving emotional expression (Tamres, Janicki, & Helgeson, 2002). More specifically in conflict situations, female partners have been reported to be emotionally more expressive than male participants, while male partners showed more "stone walling" and withdrawal (Carstensen et al., 1995; Christensen & Shenk, 1991; Heavey et al., 1993).

In general, the use of "you"-words decreased linearly throughout the conflict interaction for both male and female partners. Overall, gender differences were observable:Women used more "you"-words over the course of the conflict interaction. Since "you"-talk was found to be related to arguing and blaming (Georgiou et al., 2011), the higher use of "you" by female partners is in line with gender-specific findings regarding demand-withdrawal patterns of conflict interactions in couples, which suggest demand being a female strategy (Carstensen et al., 1995; Heavey et al., 1993). The temporal unfolding of "you" is in so far interesting, as it peaks right in the beginning of the conflict conversation. Taking "you" as an indicator of blaming and arguing, the decrease of "you"-talk of male and female partners in the conflict interaction might be a specific pattern in samples like the current one with highly satisfied couples. Further research is needed with more heterogeneous samples in order to explore potentially different patterns of "you" use in conflict situations as a proxy of blaming behavior. Couples in discord or with highly dysfunctional conflict patterns may not show this constant decline, never reaching a functional negotiation phase in their conflicts.

As expected, changes of "we"-talk over the course of the conflict interaction followed a u-shape trajectory for male and female partners, at least in the more parsimonious models, which did not control for age differences. Interestingly, "we"- talk was higher in male partners and the u-curve shaped trajectory was only significant for males. Pennebaker and Lay (2002) discussed that "we" can variously be a marker of communal perspective and occasionally used as a "royal we" signaling power differences ("We have to clean this mess up"). Although the empirical evidence that "we"-talk has been replicated several times in different labs (Seider et al., 2009; Sillars et al., 1997; Simmons et al., 2005), the limitations of the LIWC-based counting approach is that the linguistic context cannot be taken into account and needs to be investigated with other language analysis methods. Accordingly, on the one hand, higher use of "we"-talk by male participants might mirror the de-escalation behavior of male partners in previous findings by applying a communal perspective over the discussion (Carstensen et al., 1995). On the other hand, it cannot be ruled out that power-related aspects involving emotional distancing and withdrawal of male participants in conflict interactions are also explanations for the use of "we" in this context. Further research is needed to identify which of the two conflicting hypotheses is correct or under which circumstances the first or second hypothesis holds.

Lifespan literature suggests age differences in intimate relationships (Carstensen et al., 1995; Lang & Carstensen, 1994; Levenson et al., 1993) and use of personal pronouns

(Pennebaker & Stone, 2003; Seider et al., 2009). Accordingly, age-group differences were tested, and it was analyzed whether the observed patterns of change in use of "I"-talk, "you"-talk, and "we"-talk during conflict would differ between age groups. At a group-comparison level, old and middle-aged women used less "you"-talk than young women in this study. This agrees with findings from research of conflict behavior of elderly couples (Carstensen et al., 1995), which implies that elderly couples are less engaged (Seider et al., 2009) during conflict conversations. Accordingly, in this study, older men used less "I" in the conflict conversation compared to young men, indicating less emotional expression and involvement in the conflict situation. However, this age difference could not be found in women, who in general used more "I" than men.

Furthermore, the unfolding of "you"-talk over time was different for older compared to younger male partners. The slope of older males suggests a stronger decline of confrontational language over the conflict situation, which again is in line with the notion of less engaged conflicts in elderly couples. The decline of "you"-talk by women did not differ between age groups. The main effect of a linear decrease of "you" talk did not hold in the model controlling for age differences. As the significant interaction suggests, it was driven by the older males in the sample. Further research is needed to get a better understanding of the prototypical unfolding of "you" talk in conflict conversations.

Against other findings in the literature, where at least older wives showed higher "we-ness" in conflict situations (Seider et al., 2009), in this study no baseline differences could be found. This might possibly reflect sample differences: In their study, age differences in pronouns use were tested in a heterogeneous sample of satisfied and unsatisfied couples. Trajectories of changes of "we"-talk over the course of the conflict interaction differed in three age groups of our sample. The quadratic trajectory of "we"-talk was significantly different for old men as compared to the younger male partners, suggesting a less pronounced u-shaped curve in older male partners. This could be interpreted as reflecting the attempt to maintain a communal orientation even during the arguing phase, which is characterized by a confrontational nature. However, the female trajectories did not differ between age groups. Possibly, "we"-talk has different meanings for men and women in these conflict situations of young or old couples. Seider et al. (2009) showed that marital dissatisfaction was more strongly associated in older couples with the use of "you" as a proxy of separateness in conflict discussions indicating a shift of meaning separateness in older couples.

Limitation

Our elderly couples also represent long-term couples. Thus, as in earlier studies extensively discussed (Carstensen et al., 1995), it is empirically impossible to disentangle the effects of age and relationship duration. Age differences with respect to "we"-talk may also reflect differences in relationship duration, seeing that older couples have been together for longer periods of time. It would be intriguing to investigate young couples (short relationship duration) in the old-age group in order to disentangle age-related from relationship-duration related effects. Moreover, another major limitation of the study is that there are differences in the perceived stressfulness of the conflict situation among the three age groups. Hence, age differences may also in parts be attributed to differences of the experienced stressfulness of the subject addressed in the conflict conversation. In general, the experimental manipulation of conflict in the lab might provoke different reactions in different couples which are meaningful. Further research is needed to look at further possible moderating variables, like whether the perceived stressfulness of the conflict topic is shared in both partners or whether couples are in discord or very happy.

Although we used observational data for this study, the conflict situation was experimentally induced in the lab. Monitoring conflict interactions of couples in real-life situations (in the absence of a video camera) could be a more promising way in the future to study the language use of couples in conflict interactions. "I"-talk, "you"-talk, and "we"-talk might have been interpreted as proxies for self-disclosure, separateness or blaming as well as togetherness or commitment, respectively. However, an additional content analysis of the verbal expressions could reveal, if this interpretation may be conceived as valid.

Conclusion and Outlook

Investigating the use of relational pronouns is a promising way to investigate the temporal intra-individual and inter-individual dynamics and within couples dynamics. This study is a first contribution to a better understanding of prototypical conflict situations in satisfied couples across ages. Gottman's theoretical framework of different phases within conflict situations was helpful to reveal sex and age differences in the temporal unfolding of relational perspectives within conflict discussions. Further research is needed for a better understanding of the adaptiveness of these trajectories in more or less satisfied couples. Furthermore, the analyses of possible mutual influences within the couple considering

actor and partner effects would be intriguing. All this would help to define relationship behavior that serves stabilization (Scholz, König, Eicher, & Martin, 2015) of marital wellbeing over the lifespan and critically inform research and preventive measures in this area. It would also be intriguing to investigate "new" couples in old-age partners in order to disentangle the influence of relationship duration and biological age. In this endeavor, monitoring relational pronoun in social interaction seems a promising pathway for future research.

4.2 Study 2: Situational Dynamics of Dyadic Coping: My Stress, Your Stress, We-stress[2]

4.2.1 Abstract

Research has indicated that dyadic coping interactions follow a systematic sequence. The use of personal pronouns and emotion words might reflect relevant aspects of the processes linked with dyadic coping interactions. However, little is known about the differential ability of couples to adjust the dynamics of their coping interactions to the situational demands that result of the differences between being the stress-communicator or the supporter in a dyadic coping interaction. The present article examines the differential temporal unfolding of couples' language use depending these two different social situations.

Transcripts of two dyadic coping interactions of 360 couples with each partner engaging in both roles are used to investigate couples word count, use of *I* words, *you* words, *we* words and the use of emotion words. The temporal unfolding of total word count, use of *I* words, *we* words, *you* words, and emotion words over the eight minutes of each interaction across two different situations was analyzed with dyadic double intercept multilevel models.

As expected, changes in language use reflected the different aspects of dyadic coping dynamics. In situations where partners are in stress communicator role, their use of word count decreases over time and they use less *I* talk over the course of the interaction. In situations with support provider role, partners word count increases over the time, while using more *I* talk and *we* talk over time. In support provider situation, partners used also

[2]A similar version of this chapter is submitted for publication (Neysari, M., Bodenmann, G., Bernecker, K., Nussbeck, F.W., Backes, S., Martin, M., Horn, A.B., 2017)

significantly more *you* talk than in stress communicator situations. Further, we found that stress communicators and support providers show different patterns of temporal change.

4.2.2 Introduction

Dealing with daily hassles and critical life events are part of every adult's life, and they require continuous adaptation to new challenges. These stressors influence different domains of individuals' lives. As one prominent example, the intimate relationship with the partner is strongly affected by these stressors, and the negative effects of the stressors can spill over into relationship quality and the communication of couples (Bodenmann, Ledermann, & Bradbury, 2007). However, couples' successful coping plays a central protective role against the potential negative effects of stressors (Bodenmann, 2005). Several theoretical and experimental approaches explain "dyadic coping" or "communal coping", in intimate relationships (Bodenmann, 1995, 1997, 2005; Coyne & Fiske, 1992; Lyons, Mickelson, Sullivan, & Coyne, 1998). Based on Lazarus and Folkman (1984)', individual-centered transactional stress theory and a process-related and systemic perspective, Bodenmanns systemic transactional model (STM) defines dyadic coping as a process in which three factors operate and interact: the expression of stress by one partner, the perception of the stress by the other partner, and the reaction of this second partner to the first partner's stress (Bodenmann, 2005).

Although STM has received increasing research attention in the last decade and a great number of studies illustrates the importance of dyadic coping for relationship functioning (see meta-analysis by Falconier, Jackson, Hilpert, and Bodenmann (2015)), the mechanisms postulated explaining dyadic coping have only been examined marginally.

One way to investigate these mechanisms is through the use of personal pronouns, as they reflect the relationship of the self with the partner in dyadic communication (Cohn, Mehl, & Pennebaker, 2004; Pennebaker et al., 2003). In particular, *I* talk, *we* talk and *you* talk have been investigated in couple communication (Rentscher et al., 2015; Rohrbaugh et al., 2008, 2012; Sillars et al., 1997; Simmons et al., 2005; Williams-Baucom et al., 2010). *I* talk, which is the use of *I* words such as *I*, *me*, *my*, and *mine*, reflects a focus of attention towards oneself and one's own thoughts and feelings and has been related to self- disclosure and honesty (Tausczik & Pennebaker, 2010). In the context of couple conflict situations the use of *I* has been found to be negatively related to relationship satisfaction in non-distressed couples, while it was associated with more satisfaction in

distressed couples (Williams-Baucom et al., 2010). *You* words such as *your* and *yours* have been found to be related to separateness, arguing (Georgiou et al., 2011), fewer family adjustments (Robbins et al., 2013), and lower relationship satisfaction (Sillars et al., 1997; Slatcher et al., 2008). Furthermore, the use of *we* words such as *we*, *our*, and *ours* reflects a person's communal perspective and has been found to be related to positive psychological and physiological outcomes (Rohrbaugh et al., 2012; Sillars et al., 1997; Simmons et al., 2005). This supports an STM perspective that defines demands affecting both partners in a couple as *we*-stress (Bodenmann, 2005).

The use of personal pronouns by couples has been found to be particularly relevant for the communication in coping situations (Rentscher et al., 2013; Rohrbaugh et al., 2008, 2012; Simmons et al., 2005). Furthermore, Rohrbaugh et al. and colleagues 2008, 2012 have outlined the importance of the speaker's role in understanding *we* talk in couples dealing with severe illness. *We* talk from support providers, but not support receivers (patients), was related to more favorable outcomes. This suggests that it is important to consider the social situation in which the individual communicates. The situational difference of being in the role of the provider or recipient of support is reflected in different language use. Support receivers used more first-person pronouns (*I* talk and *we* talk), whereas support providers used more second-person pronouns (*you* talk). When comparing only first-personal pronouns, support receivers used more *I* talk, and providers used more *we* talk (Rohrbaugh et al., 2008). Positive and negative emotion words (e.g., *happy* versus *crying*) have also been investigated in the context of coping with stressful situations (Cohn et al., 2004; Creswell et al., 2007; Low, Stanton, & Danoff-Burg, 2006; Pennebaker, Colder, & Sharp, 1990; Robbins et al., 2013). The results of these studies show that the frequency of the use of emotion words seems to offer a promising way to examine the emotional tone in coping situations.

In all above mentioned studies, a between-person perspective was taken by relying on scores that resulted from aggregating to an overall number of pronoun and emotion words used during the social interaction. However, this leads to the loss of pivotal information on the processes in dyadic interactions, which is counterproductive when considering the dynamic nature of dyadic coping interactions. Investigating dynamic processes requires process analyses in which pronoun and emotion words are studied across time and the social situation in which they are embedded. The findings of a recent study (Neysari et al., 2016) showed that the use of relational pronouns in a dyadic conflict situation follows specific temporal changes, and these trajectories over time are a way to observe the

segmentation of conflict interaction as introduced by GottmanGottman (1979). However, less is known about the trajectories during a dyadic coping interaction. As in conflict situations, theoretical assumptions regarding the temporal unfolding during the situation have been proposed earlier. In STM (Bodenmann, 2005), dyadic coping interactions are conceptualized as a process with three typical phases: (a) the stress signals of the support receiver (phase of communication of stress) including self-disclosure of stressful experiences , (b) the perception of these signals by the support provider (perception phase), followed by (c) the reactions of the support provider to the stress communication of the support receiver (dyadic coping phase) (for a similar model of phases see Burleson, MacGeorge, Knapp, and Daly (2002). To reduce complexity, phases 2 and 3 can be seen together as the support provision phase as opposed to the first phase which is characterized by the expression of stress by the stress communicator. Phases 2 and 3 are characterized by responsive reactions of the support provider including behaviors like paraphrasing and asking for more information in order to foster the feeling of being understood on the part of the stress communicator which is the prerequisite for a feeling of shared psychological intimacy (Reis, Shaver, et al., 1988). Furthermore, the establishment of a communal perspective on the reported stress of the partner, which could be construed in the couple as *we-stress* , Phase 1 is characterized by the stress communicators description of the harmful situation and related emotional experiences that are typically negative in nature (e.g., anger, frustration, worry, sadness). Thus, Phase 1 should be related to the use of negative emotion words: the more the stressful experiences is described, the more negative emotion word should occur. Ideally, the use of positive emotion words by the support provider increases over the course of the dyadic coping interaction, resulting in more positive emotion words towards the end of the interaction than in in the beginning of the dyadic coping interaction. However, this cannot always be expected, as the absence of negative emotions and the presence of neutral emotions may reflect prior successful dyadic coping. Hence, towards the end of the interaction should either come along with more positive emotion words or with less negative emotion words, both seems plausible from a theoretical point of view.

The Current Study

To sum up, current views on dyadic coping divide dyadic coping interactions into different phases in which each partner adapts his/her communication not only to the specific phase of the dyadic coping process but also to the social situation which defines his/her

role (support provider versus stress communicator). So far, mainly communication differences have been analyzed by focusing on the differences observed depending on the social situation of the individual, i.e., being in the role of the stress communicator as opposed to being in the role of the provider of support (Bodenmann, 2008). However, to our knowledge, no study so far has investigated the temporal trajectories of change in dyadic coping situations. Such temporal trajectories are important to consider because they should differ depending on the social situation in which the respective partner is. This paper aims to examine whether trajectories of change in communication reflect the segmentation of dyadic coping interactions as suggested by STM and whether these temporal changes differ in two situations, where spouses are the stress communicator and the support provider, respectively. Earlier studies have introduced a paradigm that allows investigating a dyadic coping situation in the lab. Commonly, the couple engages twice in the standardized dyadic coping situation, so that each partner acts as stress communicator respectively support provider once. The paradigm allows for comparing these two situations directly, controlling for between-couple and between-individual differences because there is a within-person variation of the situation (each spouse as stress communicator as well as support provider). Thus, differences of temporal dynamics between roles can be seen as merely situation driven and neither as characterizing the individual spouse nor the dyad.

In this study, we hypothesize that non-distressed couples' total word count, *I* talk, *we* talk, *you* talk, and the use of positive and negative emotion words change over the course of the two dyadic coping phases. Furthermore, we hypothesize that the patterns of temporal change of word use differ depending on the situation, whether the partner in a dyadic coping situation is a stress communicator seeking support or a support provider. More specifically, we assume that in situations where the person is the stress communicator the individual should talk more at the beginning of the interaction (representing Phase 1 of the STM) resulting in a heightened word count. In addition, the stress communicator should engage in self-disclosure of stress as reflected in using more *I* words and negative emotion words. This should decrease in the last phase of support provision. *We* words might rise during the dyadic coping sequences reflecting a shift from self-focus during stress expression to a communal focus. In contrast, we expect that spouses in the support providing situation increase their total number of spoken words over the interaction, resulting in a higher word count in Phase 2 than in Phase 1. Support providers should use more use more *you* words, reflecting responsive paraphrasing and encouraging of the

Table 4.5: Demographic characteristics of the participants

	Couples($N = 360$)	
	Female	Male
Relationship duration, $M(SD)$	21.66 (18.08)	
Age (SD)	48.16 (18.22)	
Marital Status		
Not married	25.8%	
Engaged	1.1%	
Married	58.1%	
2nd Marriage	8.1%	
Children	65.6%	65.5%
Education		
Primary School	2.0%	1.4%
Secondary	3.1%	1.7%
Commercial	41.7%	34.8%
High school	20.7%	12.8%
University	31.4%	49.3%

stress communicator. Additionally, they should use more *we* words as a reflection of a shared definition of the expressed stress as *we* stress. In general, we expect the positive emotional tone to increase as reflected in increased use of positive emotion words in both social situations stress communication and support provision.

4.2.3 Method

The present study is part of a larger research project on the impact of stress on the relationship development of couples and children across the lifespan.

Participants

The final sample consisted of 368 heterosexual couples. After exclusion of 8 couples from our data set due to missing data, our sample included $N = 360$ couples. Our sample represented highly satisfied couples with $M = 4.33$, ($SD = .50$) for female partners and $M = 4.38$ ($SD = .47$) on the 5-point scale of the German Version of the Relationships Assessment Scale (RAS) (Hendrick, 1988; Sander & Böcker, 1993). The couples were sampled across three age groups (young, middle, and old couples). Detailed demographic information of the participants is listed in Table 4.5.

Procedure

This project was advertised in newspapers and on the radio as a study on the impact of stress on the relationship development of couples. Couples who were interested in partic-

ipating were contacted and informed about the procedure of the study. If a couple was interested and agreed to participate, the partners completed the questionnaires independently from each other at home and brought the questionnaires to the laboratory. At the laboratory, both partners signed the informed consent form and were then escorted to separate rooms, where they completed two additional sets of questionnaires. Couples performed three videotaped interaction tasks: one standard conflict interaction task and two tasks of mutual support. This study uses data from the dyadic coping interactions.

Dyadic coping task In two dyadic coping interaction tasks, each of the partners was asked to choose a topic about which they had recently felt stressed but which was not directly related to their relationship. The dyadic coping interaction task in this study is an adapted version of Coding System for measurement of dyadic coping (Bodenmann, 2008). To find the subject, couples were provided with a list of eight areas often related to couple-external stress (word and education, social life, leisure activities, children, family of origin, living conditions, finances, and daily hassles). Participants had the option to choose a subject that was not on the suggestion list. In two eight-minute interactions, each partner had to talk about the stressful event or subject with the other partner. These interactions were video recorded. Couples were told to behave as in their daily lives. The procedure was evaluated and approved by the local ethics committee.

Verbal communication A team of trained research assistants transcribed the recordings of the conflict interactions from standard German and Swiss-German dialect into standard written German (see Neysari et al. (2016)). These transcripts were analyzed using Linguistic Inquiry and Word Count (LIWC), a software package for quantitative text analysis with a series of built-in dictionaries(Pennebaker et al., 2007; Wolf et al., 2008). LIWC counts each word, sorts it into a linguistic category, and then gives the percentage of each word category in relation to the total word count. LIWC also enables the segmentation of a text to give the percentage of each word category in a specific segment defined by the user. For this study, we analyzed the transcripts of the conflict interaction in 1-minute segments; thus, we had eight time segments for 8 minutes of conflict interaction. One of the LIWC categories is "personal pronouns", which is divided into "I", "you", "we", and "other". The word category "I" includes personal pronouns relating to self (*me*, *my*, *mine*), "you" includes pronouns *you*, *your*, *yours*, and "we" includes *our*, *ours*, *we*, and *us*. Moreover, LIWC divides affect words into two categories: positive (e.g.,

happy) and negative (e.g., *sad*). Descriptive statistics of pronouns use are summarized in Table 4.6. An earlier study with a dierent conversation task revealed that 1-minute segments allow a good portion of natural language use to be captured and analyzed (Neysari et al., 2016).

Data analysis

The dataset consisted of 360 (couples) x 2 (persons) x 8 (sequences) x 2 (situations) = 11520 observations. For our analyses, we used a multilevel model for dyadic data as suggested by Laurenceau and Bolger (2005) that treats the three levels of distinguishable dyadic data (dyads nested within persons nested within couples) as two levels of random variation and is called double entry or double intercept model. The lower level represents variability due to within-person repeated measures for male partners and female partners taking into account the covariation within dyads. The upper level represents between-couples' variability across the male partners and across the female partners (Bolger & Laurenceau, 2013). The models were estimated in R (R-Core-Team, 2013, version 3.0.1) using the lme4 package (Bates et al., 2013).

To test our hypotheses, we modeled the change in pronoun use over the course of the eight sequences by introducing a variable *time* which represents the number of sequences over both conditions. *Time* was centered at the first sequence of a dyadic coping interaction such that time ranged from $i \in [0, 7]$ in Equations 4.9 and 4.10. In all models, we tested for linear (*time*) and quadratic (*timeQ*) effects of time. All models included gender as a control variable. As relationship duration is correlated with $r = .88$ with age this can also be seen as a control for the big range of age in this sample. The models tested for fixed and random effects of time and for fixed effects of situation (stress communicator = 0; support provider = 1) and for their two-way interaction. Even though, gender differences have been detected in earlier studies investigating dyadic coping (Bodenmann et al., 2015), gender differences are beyond the scope of this study which focuses on the within-person and dyad difference over the dyadic coping situation. As gender was used as the source of distinguishability of dyads possible gender differences are reflected in the different slopes for male and female spouses. If the results were different between the slopes, post-hoc Chi-square tests were conducted to test for statistical significance of the difference.

Equations 4.9 to 4.16 represent the model testing for the linear and quadratic effects of time and the situation effect on pronoun use.

Table 4.6: Descriptive statistics of word count, *I* words, *you* words, *we* words, positive and negative emotion words over the course of the conversation in the stress-communicator versus support-provider situation (duration in total 8 minutes)

			1 min. M (SD)	2 min. M (SD)	3 min. M (SD)	4 min. M (SD)	5 min. M (SD)	6 min. M (SD)	7 min. M (SD)	8 min. M (SD)
Word count	M	Receiver	115.60 (36.48)	114.67 (42.35)	105.84 (45.05)	101.85 (46.28)	97.45 (45.10)	95.50 (42.16)	94.55 (44.55)	87.13 (42.60)
		Provider	34.42 (31.53)	56.56 (44.74)	64.26 (43.87)	71.54 (39.59)	74.81 (40.68)	74.83 (41.45)	78.41 (40.38)	71.39 (39.40)
	F	Receiver	118.14 (37.02)	111.83 (47.45)	107.73 (47.52)	100.10 (43.03)	98.49 (44.23)	96.73 (41.79)	88.96 (42.41)	88.07 (44.71)
		Provider	33.06 (33.98)	49.66 (41.33)	62.94 (43.95)	69.76 (43.40)	73.39 (44.08)	74.21 (40.82)	73.83 (41.08)	70.86 (40.95)
I	M	Receiver	6.47 (3.64)	5.94 (3.37)	5.65 (3.61)	5.85 (3.69)	5.43 (3.73)	5.75 (3.89)	5.76 (3.99)	5.44 (3.90)
		Provider	3.51 (5.18)	3.50 (4.19)	3.93 (4.13)	3.65 (3.52)	3.98 (3.77)	3.91 (3.93)	4.05 (3.65)	3.65 (3.56)
	F	Receiver	7.43 (3.72)	7.08 (4.08)	7.01 (4.18)	6.68 (3.81)	6.76 (4.05)	6.58 (4.06)	6.67 (4.50)	6.02 (3.84)
		Provider	2.73 (3.93)	2.82 (3.87)	3.85 (4.05)	3.60 (3.62)	3.75 (3.61)	4.05 (3.79)	4.03 (3.57)	3.98 (3.78)
You	M	Receiver	1.38 (1.89)	1.37 (1.83)	1.57 (2.12)	1.74 (2.24)	1.77 (2.36)	1.67 (2.24)	1.96 (2.63)	1.93 (2.59)
		Provider	4.13 (5.27)	3.83 (4.22)	4.14 (4.09)	4.17 (3.90)	4.25 (4.10)	4.46 (4.03)	3.98 (3.49)	3.60 (3.57)
	F	Receiver	2.04 (2.25)	1.97 (2.55)	2.23 (2.79)	2.27 (2.43)	2.55 (2.85)	2.50 (2.68)	2.26 (2.56)	2.56 (2.80)
		Provider	4.03 (4.82)	4.67 (4.79)	4.90 (4.51)	4.99 (4.41)	4.65 (4.28)	4.34 (4.00)	4.54 (4.05)	4.51 (3.82)
We	M	Receiver	1.08 (1.49)	0.96 (1.51)	0.95 (1.54)	0.98 (1.56)	1.02 (1.69)	1.24 (1.87)	1.06 (1.88)	1.25 (2.03)
		Provider	0.76 (2.02)	0.71 (1.65)	0.71 (1.60)	0.89 (1.70)	0.93 (1.97)	1.06 (2.04)	1.14 (2.09)	1.17 (2.18)
	F	Receiver	0.89 (1.44)	0.77 (1.31)	0.97 (1.78)	0.84 (1.41)	0.94 (1.49)	0.96 (1.56)	1.06 (1.66)	1.10 (1.66)
		Provider	0.69 (3.05)	0.63 (1.60)	0.66 (1.41)	0.81 (1.60)	0.95 (1.87)	0.89 (1.64)	1.17 (2.15)	0.88 (1.67)
Pos-emo	M	Receiver	2.03 (1.55)	2.43 (2.03)	2.47 (2.24)	2.68 (2.80)	2.35 (2.09)	2.68 (2.31)	2.57 (2.19)	2.63 (2.33)
		Provider	2.20 (5.15)	2.24 (2.73)	2.30 (2.62)	2.42 (2.37)	2.32 (2.38)	2.53 (2.31)	2.56 (2.26)	2.44 (2.61)
	F	Receiver	2.19 (1.68)	2.58 (1.91)	2.54 (2.35)	2.63 (2.10)	2.61 (2.13)	2.60 (2.22)	2.45 (2.40)	2.48 (2.07)
		Provider	1.94 (6.09)	2.09 (3.29)	2.44 (3.07)	2.53 (2.42)	2.38 (2.52)	2.65 (2.61)	2.77 (2.65)	2.49 (2.52)
Neg-emo	M	Receiver	1.79 (1.56)	1.26 (1.30)	1.29 (1.50)	1.35 (1.82)	1.25 (1.51)	1.19 (1.42)	1.21 (1.48)	1.05 (1.52)
		Provider	1.42 (2.94)	1.42 (2.83)	1.17 (1.83)	1.11 (1.57)	1.18 (1.80)	1.23 (2.04)	1.05 (1.58)	1.21 (1.83)
	F	Receiver	1.82 (1.64)	1.52 (1.51)	1.34 (1.47)	1.30 (1.47)	1.42 (1.86)	1.24 (1.49)	1.25 (1.90)	1.26 (1.52)
		Provider	1.06 (2.35)	1.37 (2.73)	1.20 (2.01)	1.36 (3.20)	1.18 (1.78)	1.32 (1.87)	1.42 (1.97)	1.09 (1.64)

Double entry models were specified as follows: Equations 4.9 and 4.10represent the models testing for the linear and quadratic effects of time on pronoun use separately for male and female partners. Equations 4.11 to 4.16 represent models testing for the effects of situation, controlling for relationship duration the overall use of pronoun (4.11 and 4.12), as well as for situational differences in linear (4.13 and 4.14) and quadratic trends (4.15 and 4.16) over time.

$$YM_{ij} = \beta_{0jM} + \beta_{1jM}(time_{ij}) + \beta_{2jM}(timeQ_{ij}) + \epsilon M_{ij} \tag{4.9}$$

$$YF_{ij} = \beta_{0jF} + \beta_{1jF}(time_{ij}) + \beta_{2jF}(timeQ_{ij}) + \epsilon F_{ij} \tag{4.10}$$

$$\beta_{0jM} = \gamma_{00M} + \gamma_{01M}(sit_{jM}) + \gamma_{02M}(rel\_dur_j) + \mu_{0jM} \tag{4.11}$$

$$\beta_{0jF} = \gamma_{00F} + \gamma_{01F}(sit_{jF}) + \gamma_{02F}(rel\_dur_j) + \mu_{0jF} \tag{4.12}$$

$$\beta_{1jM} = \gamma_{10M} + \gamma_{11M}(sit_{jM}) + \mu_{1jM} \tag{4.13}$$

$$\beta_{1jF} = \gamma_{10F} + \gamma_{11F}(sit_{jF}) + \mu_{1jF} \tag{4.14}$$

$$\beta_{2jM} = \gamma_{20M} + \gamma_{21M}(sit_{jM}) + \mu_{2jM} \tag{4.15}$$

$$\beta_{2jF} = \gamma_{20F} + \gamma_{21F}(sit_{jF}) + \mu_{2jF} \tag{4.16}$$

4.2.4 Results

Communication over time and situation

Word count. Results of the double intercept multilevel models are summarized in Table 4.7. There were significant main effects for both linear and quadratic *time*time over the coping sequence. The main effect of situation was also significant, showing that partners talked more in situation with the stress communicator role. Two significant linear *time* x *situation* and quadratic *time* x *situation* interactions revealed that the trajectories of changes in word count over the course of an interaction differed depending on the situation for both male and female partners. While the word count of support providers increased quadratically over time, stress communicators showed a linear decrease of word count over the course of interactions (see Figure 4.3).

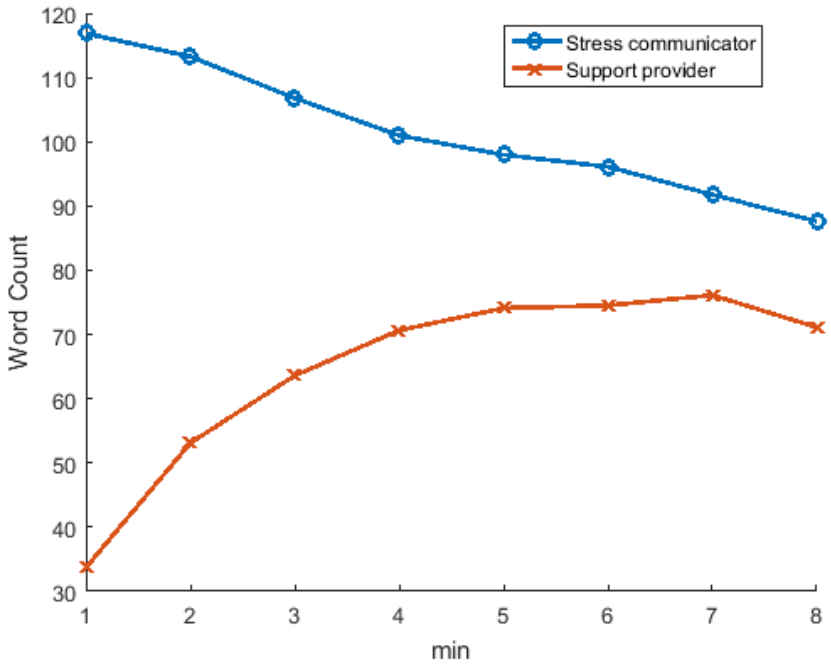

Figure 4.3: Change in word count over time for partners in the stress-communicator and support-provider situation.

***I* talk.** We found a significant linear decrease of *I* talk over time but no quadratic time effects (see Table 4.7). The main effect for situation was significant and negative, suggesting that stress communicators used more *I* words than support providers. The significant *linear time* x *situation* interactions for female and for male participants and quadratic *time* x *situation* interactions for male participants confirmed that patterns of temporal changes of *I* talk differed depending on the situation (see Figure 4.4). While *I* words increased quadratically for support providers, it decreased linearly for stress communicators. As a conducted post-hoc Chi-square test confirmed, there were no significant differences between male and female outcomes, $x^2(1, N = 2) = 0.14, p = .70$.

***We* talk.** Results did not indicate any significant linear or quadratic change over time in *we* talk (see Table 4.7); *we* talk was stable over the course of the conversation. However, there was a significant main effect of situation, indicating higher levels of *we* talk by stress communicators. There were no significant *time* x *situation* interactions (see Figure 4.5).

***You* talk.** There was no significant main effects for *time*. As indicated by a positive significant effect of *situation*, support providers used more *you* words than stress communicators did. We also tested for linear and quadratic *time* x *situation* interaction effects

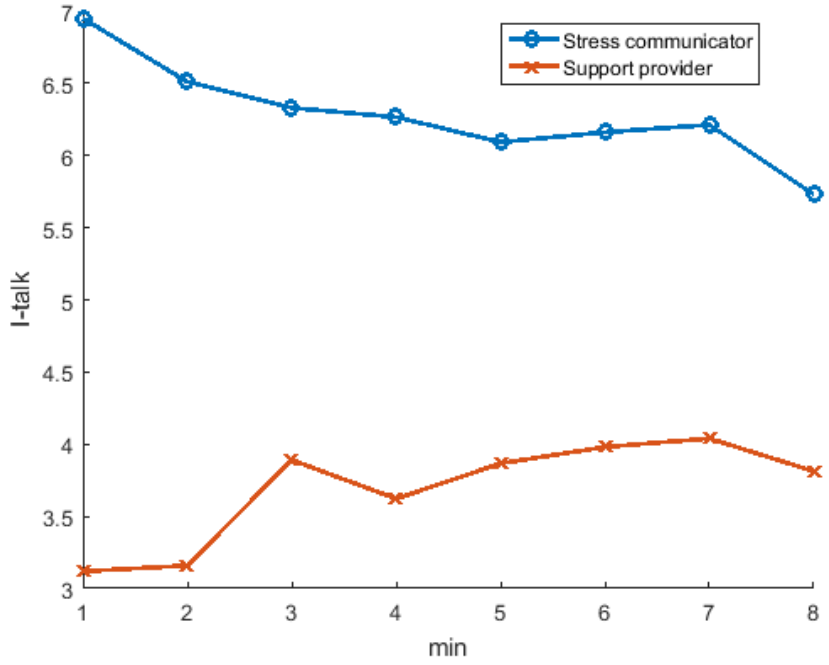

Figure 4.4: *I* talk by stress-communicator and support-provider across the dyadic coping interaction.

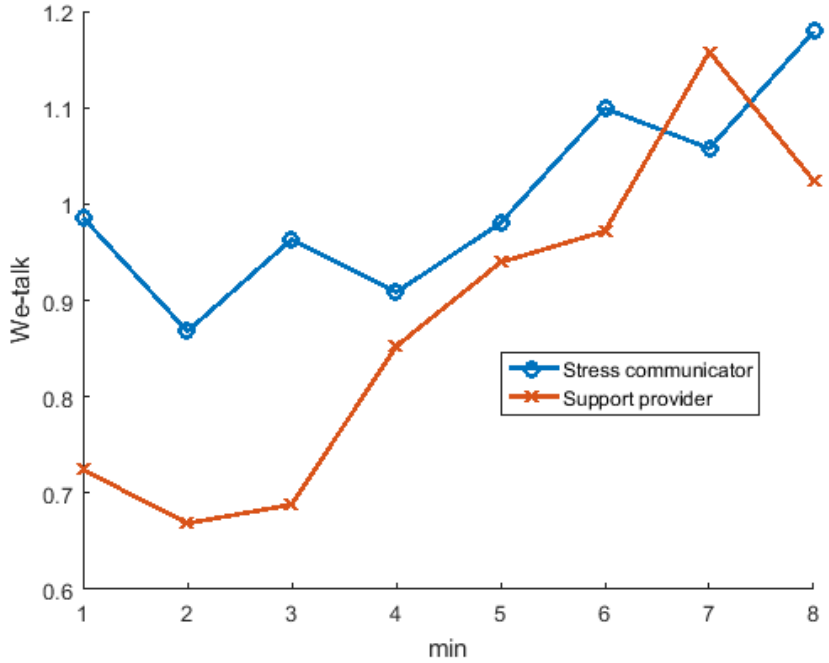

Figure 4.5: *We* talk by stress-communicator and support-provider across the dyadic coping interaction.

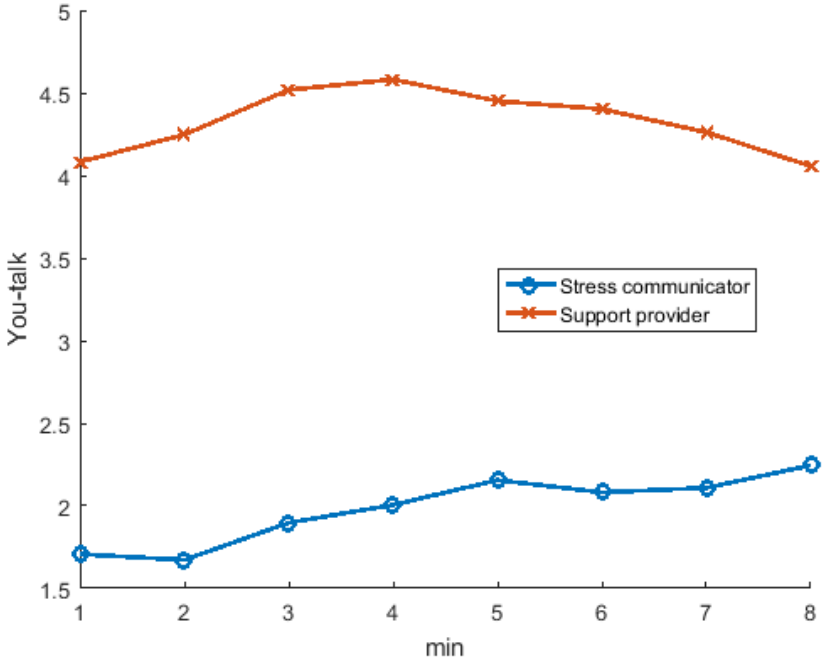

Figure 4.6: *You* talk by stress-communicator and support-provider across the dyadic coping interaction.

on *you* talk. The analyses showed significant linear effects of *time* x *situation* interaction for male and female partners and also significant interaction of *time* x quadratic *situation* effects. In situations with support provider role, *you* talk increases towards the middle of the interaction and levels off toward the end of the dyadic coping interaction. In situation with stress communicator role there is a linear increase for *you* talk over the dyadic coping interaction (see Figure 4.6).

Positive emotion words. There was a significant *linear time* effect for the use of positive emotion words for male participants, suggesting an increase in the use of positive emotion words over the dyadic coping sequence. Further, there was a significant main quadratic *time* effect on female use of positive emotion words, but not for male use of positive emotion words. We tested the differences between male and female slopes; the tests rejected any significant gender differences (for *time*, $x^2 = 0.78, df = 1, p = 0.37$ and for *timeQ*, $x^2 = 1.19, df = 1, p = 0.27$). Figure 4.7 shows that positive emotion words increased more strongly at the beginning of the conversation (see Table 4.7). A significant negative main effect of situation indicated more use of positive emotion words by female stress communicators. There were no significant *time* x *situation* interactions for use of positive emotion words (see Figure 4.7).

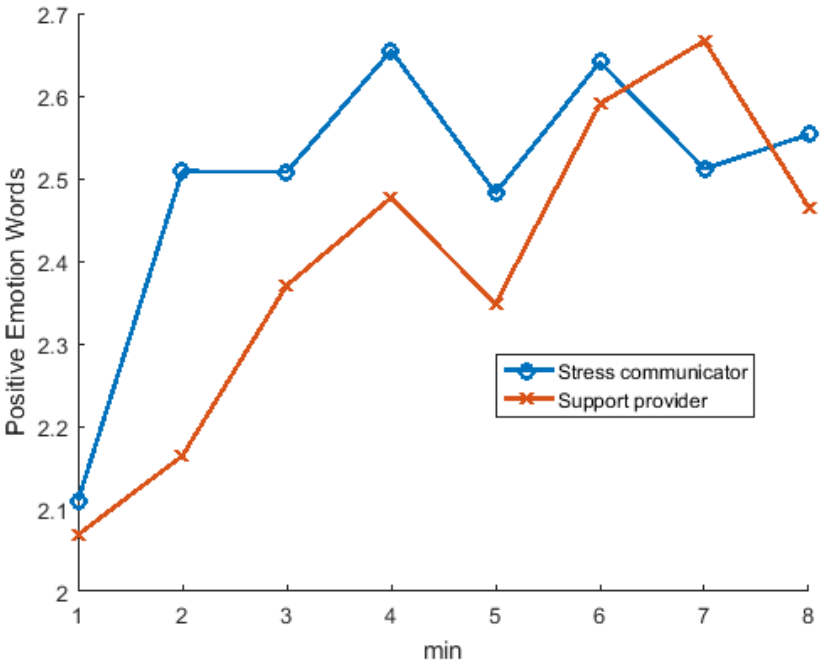

Figure 4.7: Positive emotion words by stress-communicator and support-provider across the dyadic coping interaction.

Negative emotion words. There was a significant negative *linear time* effect on the use of negative emotion words by both male and female partners, suggesting that negative emotion words decreased over time (see Table 4.7) and especially at the beginning of the conversation (see Figure 4.8). The main quadratic *time* effect on use of negative emotion words was significant for female partners. A subsequent Chi-square test rejected any gender-specific differences in quadratic effects of time on use of negative emotion words, $x^2 = 0.33, df = 1, p = 0.56$. Situation had a significant negative effect for female partners, suggesting that female partners in the stress communicator role overall used more negative emotion words than when they were in the support provider role. The main effect of *situation* differed significantly between male and female participants ($x^2 = 6.86, df = 1, p = 0.01$) suggesting gender-specific communication in two different situations. Additionally, there were significant linear and quadratic *time* x *situation* interactions, suggesting that trajectories of change over time differed between the two situations. However, these interaction effects were only significant for female partners (*time* x *situation*, $x^2 = 5.41, df = 1, p = 0.02*$ and *timeQ*, $x^2 = 5.19, df = 1, p = 0.02$). Stress communicators started with more negative emotion words, which declined sharply at the beginning of the conversation and leveled off towards the end. In contrast, support providers started with relatively low levels of negative emotion words, and these decreased over time, following a quadratic trend.

Table 4.7: Results from two-level double interecept multilevel models predicting linear and quadratic trends in two situations in word count, use of relational pronouns *I*, *we* and *you* and positive and negative emotion words in distinguishable dyads.

Variable	Word Count b (SE)	*I* b (SE)	*You* b (SE)	*We* b (SE)	Pos-Emotion b (SE)	Neg-Emotion b (SE)
Fixed Effects						
Female Intercept	**122.65** (2.21)	**7.93** (0.20)	**2.29** (0.16)	**0.58** (0.10)	**2.39** (0.16)	**1.74** (0.10)
Male Intercept	**118.89** (2.23)	**6.87** (0.21)	**1.87** (0.15)	**0.75** (0.09)	**2.27** (0.15)	**1.60** (0.10)
Rel. Duration Female	**-0.22** (0.06)	**-0.03** (0.00)	**-0.02** (0.00)	**0.01** (0.00)	-0.00 (0.00)	0.00 (0.00)
Rel. Duration Male	-0.10 (0.06)	**-0.02** (0.00)	**-0.02** (0.00)	**0.01** (0.00)	-0.01 (0.00)	0.00 (0.00)
Time Female	**-41.03** (8.21)	-1.07 (0.74)	1.05 (0.61)	-0.07 (0.38)	**1.28** (0.64)	**-1.33** (0.40)
Time Male	**-35.99** (8.18)	**-2.02** (0.76)	0.89 (0.59)	-0.31 (0.36)	**1.29** (0.60)	**-1.05** (0.40)
TimeQ Female	11.07 (7.87)	-0.02 (0.71)	-0.51 (0.58)	-1.15 (0.35)	**-1.15** (0.58)	**0.87** (0.38)
TimeQ Male	8.15 (7.84)	1.31 (0.71)	-0.28 (0.57)	0.53 (0.35)	-0.87 (0.56)	0.57 (0.38)
Situation Female	**-83.49** (2.25)	**-4.64** (0.22)	**1.71** (0.18)	**-0.26** (0.10)	**-0.36** (0.16)	**-0.62** (0.11)
Situation Male	**-79.25** (2.25)	**-2.89** (0.22)	**1.95** (0.18)	**-0.37** (0.10)	0.03 (0.16)	-0.17 (0.11)
Sit. x Time Female	**156.86** (10.51)	**4.30** (1.04)	1.64 (0.83)	0.68 (0.48)	0.52 (0.75)	**2.08** (0.53)
Sit. x Time Male	**149.87** (10.52)	**3.50** (1.04)	**1.99** (0.84)	0.56 (0.48)	-0.70 (0.75)	0.13 (0.53)
Sit. x TimeQ Female	**-91.66** (10.10)	**-1.91** (0.10)	-1.54 (0.80)	-0.52 (0.46)	-0.01 (0.72)	**-1.57** (0.51)
Sit. x TimeQ Male	**-88.28** (10.12)	**-2.45** (1.00)	**-2.27** (0.81)	-0.26 (0.46)	0.58 (0.72)	0.08 (0.51)
Random Effects (SD)						
Between Couple						
Female	16.22	1.38	1.25	0.96	2.01	0.68
Male	15.69	2.00	0.90	0.58	1.44	0.98
Time Female	66.19	2.39	3.89	3.16	6.74	2.47
Time Male	64.51	3.45	2.36	2.20	5.26	2.52
TimeQ Female	62.28	2.15	3.39	2.65	5.15	2.10
TimeQ Male	60.70	1.89	1.92	2.45	4.35	1.96

Note. Situation is coded as 1 = support-provider; 0 = stress-communicator.

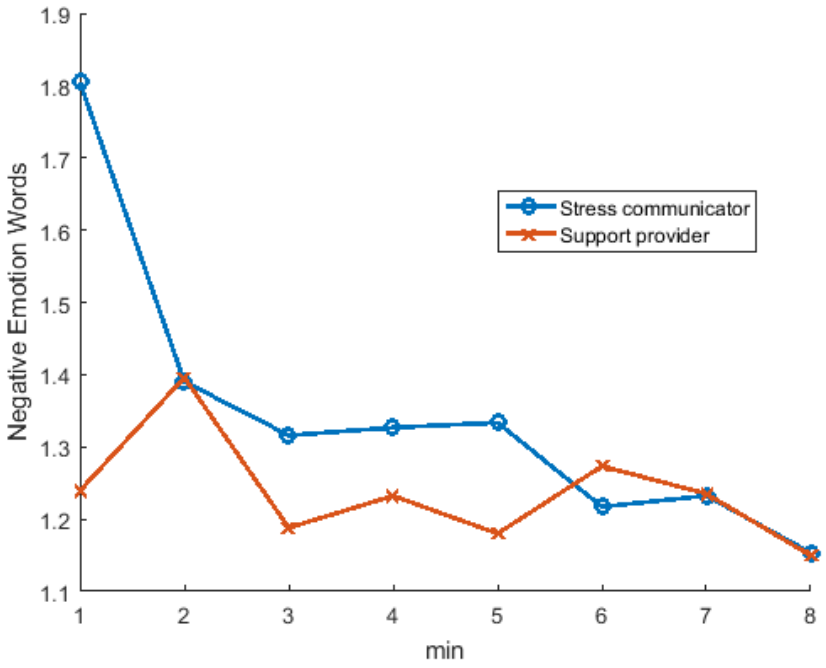

Figure 4.8: Negative emotion words by stress-communicator and support-provider across the dyadic coping interaction.

4.2.5 Discussion

The aim of this study was to investigate the temporal and situational dynamics of dyadic coping in couples. First, we investigated the patterns of change in the number of spoken words –*I* talk, *we* talk, and *you* talk– and the percentage of positive and negative emotion words over the course of a dyadic coping interaction. Further, we examined whether the patterns of change in these word categories differ depending on the role of the partner and the specific situation (stress communicator or support provider).

Results showed as expected that partners in situations with the role of the stress communicator overall talked more than when they were in the supporting role and that their talking decreased, probably after their disclosure about the stressful topic in the beginning, and as a consequence, support providers became more active. These patterns (as shown in Figure 4.3)illustrate the ongoing processes in dyadic coping interactions suggested by the systemic transactional model of stress and coping in couples (STM; Bodenmann, 2005). Dyadic coping interactions start with one partner's stress-related self-disclosure which is followed by the perception of his/her stress by the other partner, who responds with dyadic coping reactions. This chain of stress communication and dyadic coping behavior is well reflected in partners numbers of spoken words. The stress communicator starts the interaction with many words, probably the stress-related self-

disclosure, then the support provider starts talking, increasing the word count, by showing support for the first partner.

I talk as a reflection of self-disclosure and self-focus (Ickes, Reidhead, & Patterson, 1986) was represented in the results as expected. Confirming previous findings (Rohrbaugh et al., 2008), our results showed that stress communicators used more *I* talk, describing and expressing their subjective stress experience, than support providers, who engaged more in *you* and *we* talk. As expected, later in the interaction stress communicators reduced their use of *I* talk which is in line with the theoretical assumption of a more responsive, coping oriented end of dyadic coping interactions. Thus, these findings support our assumption that stress communicators use *I* words more often at the beginning of the dyadic coping interaction. While the *I* statements of stress communicators decreased over time, the support providers used more *I* words over time; however, the use of *I*words by support providers remained low. Nevertheless, they might reflect the support provider's expression of his/her responsive understanding or advice including a certain amount of self-disclosure (e.g., "I completely understand what you mean"; "I would react similarly at your place"; "I suggest that you try this to solve the problem"). These patterns of change in couples' use of *I* words depending on time and role in the dyadic coping process is in line with the dyadic coping process suggested by STM (Bodenmann, 1995, 1997, 2005). The results can be interpreted as supporting the notion that a dyadic coping conversation starts with a stress communicator's *I* statements expressing stress and worry about a stressful experience; these trigger the support provider's perception of the others' stress, thus eliciting supportive dyadic coping reactions.

We talk, as an indicator of couples' communal perspective (Pennebaker & Lay, 2002), was used more frequently by stress communicators in this study. This could be interpreted as an attempt by the stress communicator to connect more intensively with the support provider and establish a communal perspective on his or her individual stressor.

In both situations, the increase in the use of we words over the dyadic coping process could be interpreted as reflecting emotional connecting (e.g., empathic joining, understanding, expressing solidarity with the partner) as well as mutual problem-solving attempts that are supposed to represent positive dyadic coping strategies (see common/joint dyadic coping; Bodenmann, 2005).

In situations of support provision, partners used more *you* words. Their use of *you* words increased during the interaction, reaching a peak at the middle and decreasing slightly toward the end. Stress communicators' *you* talk increased slightly over the course

of the interaction; however, their *you* talk was at a very low level throughout the dyadic coping interaction. Their *You* wordings included questions such as "Do you understand how this was for me?" and "Have you had a similar experience?". These findings highlight the importance of considering the situational context for the meaning of word use. Higher levels of *you* talk by support providers may reflect its situational adaptive significance (e.g., "You should not be so terrified, everything's going to be alright"; "You're right, this must have been very embarrassing for you"). These findings highlight the importance of considering the situational context for the meaning of word use because depending on the situation. *you* words were used very differently by stress communicators and support providers. *you* words in conflict communication, however, may still have a completely different meaning and often reflect blaming the partner, attacking the partner, or denigrating the partner (Simmons et al., 2005). Our examples show that this was probably not the case in our study. However, future research is needed to further embed the meaning of pronoun use within particular contexts. In relationship education programs, such as the Couples Coping Enhancement Training (CCET, Bodenmann & Shantinath, 2004)), partners in the support provider role are trained to ask their partners open-ended questions for a better understanding of the stressful situation (e.g., "What did this mean to you?"; "What happened to you?"). Asking these questions helps a support provider to explore his/her partners emotions, to better understand the partner, and to be better able to adjust his/her support to the partner's needs (Optimal Matching Model, Cutrona & Russell, 1990; Cutrona, Shaffer, Wesner, & Gardner, 2007).

In CCET, support providers are also advised to listen to their partners carefully and to summarize important emotions, needs, or goals that stress communicators reveal (Bodenmann & Shantinath, 2004). Hence, higher levels of *you* talk by support providers in dyadic coping might reflect situational adaptive behavior and differs in purpose from *you* talk in conflict discussions.

Changes in the use of positive emotion words followed similar patterns in both situations as those of pronouns. However, partners started their dyadic coping interaction with different levels of negative emotion words depending on their role (stress communicator or support provider). These findings are again in line with Bodenmann's 1995, 1997, 2005 description of dyadic coping interaction (STM).

Partners used more negative emotion words when they were in the stress communicator role, yielding empirical evidence for the assumptions made in STM. The more frequent use of negative emotion words by stress communicators probably reflects their

stress-related emotional self-disclosure, which should be accompanied by more negative emotion words. Figure 4.8 shows an instant increase in support providers' use of negative emotion words, reaching its peak at the same level at which the self-disclosing partner uses negative emotion words in that moment. This increase in the use of negative emotion words might indicate supportive verbal communication including expressions of empathic concern. One way of showing understanding about the negative emotion is repeating the negative emotion words of the distressed partner, which is functional in joining the partner in his/her negative mood (e.g., "I understand that you were angry"; "I see this was annoying for you"; "Of course this is frustrating"). However, our results confirm that the use of negative emotion words decreases over the course of the interaction, which suggests that using negative emotion words is part of the self-disclosure phase of dyadic coping interaction and decreases possibly once the stress partner feels better and understood. Female partners used negative emotion words more often in the dyadic coping process, especially when they were in the stress communicator role. This finding is in line with several previous studies showing that women use more emotion words than men (Mulac, Seibold, & Farris, 2000, 1990; Thomson & Murachver, 2001), although findings are not entirely consistent (Mehl & Pennebaker, 2003; Newman et al., 2008). The mixed findings of previous studies might be due to the different contexts in which the language samples were collected, which matters significantly, as this study demonstrates for the situation of stress communicator vs. support provider. The results of the present study about female emotional language lend support to previous findings about dyadic coping that showed women to be more emotion focused (Matud, 2004; Ptacek, Smith, & Dodge, 1994).

Limitation

One drawback of the data reported in this study is that they were collected in a laboratory situation. It is possible that couples' dyadic coping might have been influenced by recording. However, usually partners are concerned about being filmed in the first moments but report to forget about the video-camera during an interaction. Thus, we can assume that especially later segments are as reliable as natural interactions without recording. Another limitation is that couples were asked to talk about a stressor that they had experienced recently; thus, it was not necessarily representative of how couples usually cope as a dyad in their natural environment. We have no means to find out whether this particular stressor was an extraordinary one or a rather average one. In addition, the conversation was limited to 8 minutes, which might have biased the dynamic of the

interaction. Another limitation is the strictly word-counting based method of analysis, with all its limitations (as reported in Mehl & Gill, 2010) pronouns and emotion words were simply observed and counted within the dyadic coping process. It would be interesting to link this approach with content-based analysis. Also, the focus of the study was in so far descriptive, as the aim was to illustrate for the first time the theoretically based phases of a dyadic coping situation. However, it is not yet clear what any particular pattern of temporal change means for the quality of supportive communication, or whether and if so, how a particular temporal pattern in communication favors the functioning of intimate relationships. Further research is needed to shed more light on the interplay between situational and temporal dynamics of communication in dyadic coping and its associations with relationship and health outcomes. Nonetheless, this study has several strengths, such as a relatively large sample of couples, the use of observational data, and sophisticated dyadic analyses.

Conclusion and Outlook

This study yields information on temporal changes in couples' language use that parallel the process-related chains of typical behaviors occurring in dyadic coping interactions as described in the STM. Studying word use over the course of the interaction is an innovative way of investigating dyadic processes in specific situations. The more we understand the psychological meaning of language use in couples, the better we are likely to understand both relationships in general and tailored interventions in relationship education and couple therapy. This study is the first contribution that simultaneously assesses temporal change in language use and compares the temporal patterns of partners in different roles. Results show the practicality of investigating the temporal processes in supportive communication such as dyadic coping through language use. Further research is needed to elucidate the eects of these dynamics on relationship-related outcomes and the adaptability of the dynamics. Understanding the effects of a certain chain of communication behaviors could facilitate the fine-tuning of dyadic coping processes in a range of contexts, such as everyday life, relationship education and therapy, and even in teams in companies.

4.3 Study 3: Temporal and Situational Dynamics of Verbal Communication in Dyadic Coping Interactions over the Lifespan[3]

4.3.1 Abstract

Dyadic coping is part of intimate relationships, which plays an important role in the process of healthy aging. These interactions show temporal pattern of disclosure of stress communicator, followed by providing support of the other partner. Furthermore, being in each of the situations (being the stress communicator or the support provider) changes the temporal pattern of verbal communication. Previous studies suggest a tendency to avoid emotional arousal in old age. Hence, we expect that these temporal and situational changes in verbal communication of dyadic coping interactions change depending on the age. To test this assumption, we used a transcripts of two eight-minute dyadic coping interactions of 360 couples, in which partners changed their role, so that each partner was once the stress communicator and once the support provider. We used multilevel models for longitudinal dyadic data to test the minute-by-minute changes of word use of couples (age 20-80 years old) in the two situations of stress communicator and support provider. As expected, age changed the temporal changes in both situations. Higher age was associated with less temporal variation, which suggested less need or motivated for clarification about the stressful subject. Results suggests that older couples face the stressful situations as a team with a communal perspective. Results of this study suggest that in order to have a better understanding of changes over the lifespan, it is important to investigate the changes at a micro-level and to study the temporal changes in dyadic processes.

4.3.2 Introduction

The "lone man against the elements" view on stress and emotion regulation has been convincingly questioned in the last years (Rimé, 2007). Coping attempts are not limited to the individual but include interpersonal processes. Accordingly, a communal perspective on coping has been introduced earlier (Bodenmann, 1995, 1997, 2005; Coyne & Fiske,

[3]A similar version of this chapter is in preparation for submission.

1992; Lyons et al., 1998). More specifically, dyadic coping has been introduced as a term including all efforts of partners to face and manage the stressful issue, in order to maintain or re-stabilize the structural, functional, behavioral, emotional and social balance of the dyadic system (Bodenmann, 1995). In this context, the social situation of the dyads would be characterized by either being the stress communicator or the provider of support. The interdependence of the partners and their mutual goals stimulates a joint problem solving process and dyadic coping activities (Bodenmann, 2005). Furthermore, the dyadic interdependency evokes a vital interest of partners in supporting one another in order to guarantee their own well-being, as well as the well-being and stability of their relationship (Revenson, Kayser, & Bodenmann, 2005). This become even more important as couples age (Carstensen, 1992) and they have to cope with the existing or anticipated demand of their environment, in order to successfully manage stabilization of their quality of life (see "functional aging sciences" in Martin, Jäncke, and Röcke (2012), Martin, Schneider, Eicher, and Moor (2012)).

Despite the importance of dyadic coping processes over the lifespan (Burkert et al., 2011; Khan et al., 2013), less studies have been done on the age related differences in coping efforts in form of dyadic coping. The current study aims at looking at age related differences in dyadic coping processes, by investigating the temporal and situational changes within dyadic coping communication.

Support and dyadic coping over the life span

The "convoy model" of Antonucci discusses the changing nature of relationships and social support in adulthood (Antonucci, 1990; Kahn & Antonucci, 1980) by focusing on personal (age and gender) and situational (role expectations, resources, demands) factors that influence the support relations over the lifespan. In fact, personal (age) and situational (role) factors play an important role specifically in dyadic coping interactions, in which partners are in two distinct situations of being the stress communicator or the situation of being the support provider. The other factor, which plays an important role in social support is age. Strategies that individuals choose to face problems and the source of support change as individuals become older. In fact age has been associated to a number of changes in social relationships. Findings associated aging with less relationship disturbing emotions and less negative affect (Gross et al., 1997; Levenson, Carstensen, Friesen, & Ekman, 1991), fewer and shorter durations of experiencing negative affect (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000). Similar results of Birditt et al. (2005) showed that

older adults have fewer interpersonal tensions and are less likely to argue, and more likely to do nothing in response to tensions. Recently, it has been suggested, that older age is associated with significant contextual changes which results in lower overall levels of stress, less heterogeneity of stressors, and less disruptive stressors (Brose, Scheibe, & Schmiedek, 2013). Accordingly, old couples report fewer spousal conflicts in daily life (Charles, 2010) and they are especially motivated to solve problems with their close relationship partners (Lang & M. M. Baltes, 1997; Siebert, Mutran, & Reitzes, 1999). This goes in line with the model of strength and vulnerability integration model introduced by Charles (2010) which suggests that aging individuals tend to avoid or limit expose to negative stimuli and high negative emotional arousal. In handling everyday problems older adults seem employ a larger repertoire of strategies and choose a combination of problem-focused and emotionally passive strategies (Blanchard-Fields, Stein, & Watson, 2004; Watson & Blanchard-Fields, 1998). Older couples tend to face a shift of resources: health problems tend to rise while a selection of positive social interactions is possible and displayed. Older individuals they are most likely to report their spouse as the preferred support provider for both emotional and instrumental support (Cantor, 1979; Cantor, Brennan, & Sainz, 1995). After years of collaboration over the course of relationship, by including the spouse as a source of the support, older individuals (possibly) make a lucrative choice (Peter-Wight & Martin, 2011). Possibly, partners different abilities can compensate each other's loses and this compensation helps them dealing with different problems (see Selection, Optimization, Compensation model, P. B. Baltes and M. M. Baltes (1990)).

Research on aging and long-term romantic relationships shares the problem of confounding of age and relationship durance. Older couples tend to be in relationships with longer durations. Hence, results of studies including aging couples are often hard to interpret in terms of disentangling the effects of age and relationship (Carstensen et al., 1995).

Studies addressing explicitly dyadic coping over the lifespan are sparse. One study found that old couples use "dyadic coping" less often than young and middle-aged couples (Bodenmann, 2000). Bodenmann (2000) point to the possibility that this might be a result of the generation effect and that the older generation might have a different (instrumental) view on intimate relationship. Their study is based on questionnaires and participants had to retrospectively report about their coping strategies and this might have also influenced the results (M. Landis et al., 2013; Tennen, Affleck, Armeli, & Carney, 2000). Moreover, despite the overall impression that individuals and couples have about their own and

partner's coping efforts, it is important to compare the dyadic processes over the course of dyadic coping interactions. Dyadic processes during a dyadic coping interaction will be investigated. In order to avoid the problems commonly associated with retrospective self-report methods (M. Landis et al., 2013; Tennen et al., 2000) in this study we use an objective method and observe couples dyadic coping interactions.

The process of dyadic coping: sequences of communication

Bodenmann (2005) suggests, that a typical dyadic coping interaction begins with a phase of expression of stress by one partner, followed by a phase of perception and reaction of the other partners to the first partner's stress. Picturing the case of dyadic coping of relationship external stress, it turns out, that each partner can be in two quite different situations. One situation is characterized by being the one who suffers the relationship external stress, asking for support of the spouse (i.e. stress at work or with neighbors). Correspondingly, the other partner would be in the support provider situation. Characteristics of each situation demands certain coping efforts, which ideally need to be meet by partners in order to have a successful dyadic coping interaction.

Communication is one important aspect of support interactions (Burleson et al., 2002) and needs to match the situational demands of dyadic coping processes. The "matching models" of support process (Cohen & McKay, 1984; Cutrona & Russell, 1990) postulates that the provided support must be relevant to the expressed needs. Hence, an important first step in dyadic coping is a clear description of the stressful event and self-disclosure about personal thoughts and feeling about the stressful event by the stress communicator and making the personal stressor a *we*-stress (Bodenmann, 2005) and activating a feeling of *we*-ness and responsibility of the partner in supporting situation.

In programs targeting at the importance of dyadic coping in couples, partners in support provider situation are encouraged to deepen their understanding about their spouse's stressful experience by asking open-ended questions, like "What did this mean to you?"; "What happened to you?" (The Couples Coping Enhancement Training, Bodenmann & Shantinath, 2004). These open-ended questions help support providers to match his or her support strategies to the partner's stressful situation for a successful coping with partner's problem (Optimal Matching Model) (Cutrona & Russell, 1990; Cutrona et al., 2007). It seems plausible that addressing the partner directly with sentences including *you* has a different function as comparison to conflict situations (Neysari et al., 2017). In conflict situations the use of *you* has been associated with blaming (e.g. "you always do

that"), and accordingly with less favorable outcomes.

One way to study dyadic communication is studying the use of personal pronouns, as they can reflect the relation to self and others in social network (Pennebaker & King, 1999). While use of *I* words is related to more self-disclosure and honesty (Tausczik & Pennebaker, 2010), use of *we* words (*we*, *our*, and *ours*) reflects person's communal perspective and a sense of *we*-ness and togetherness (Rohrbaugh et al., 2012; Simmons et al., 2005). Use of personal pronouns changes parallel to the changes in the size of the social network and the quality of relationships in older age (Pennebaker & Stone, 2003). As individuals become older they tend to use less first-person singular (*I*, *me* and *mine*) (Pennebaker & Stone, 2003). This confirms the importance of the integration of self in the social network in old age and a less focused on one's self.

The Current Study

Dyadic coping interactions follow the temporal pattern of disclosure of stress communicator, followed by providing support of the other partner. Depending on the situation, each partners has once the stress communicator role and another time, the support provider role. Hence, depending on the situation, the characteristic of the situation demand a certain communication behavior in order to have a successful dyadic coping interaction. Considering the aforementioned aging effects, we expect that couple processes in dyadic coping interactions follow different patterns. Strength and vulnerability integration model (Charles, 2010) suggests a tendency to avoid emotional arousal in old age. Hence, in old adults might be less engaged in stress communication, while concurrently reflecting a strong communal perspective in both partners.

Following Bodenmans' segmentation of a dyadic coping interaction, we assume that in the first minutes of dyadic coping interactions, partners in support communicator situations disclose about their stressor, while their partners engage in active listening. In the last minutes of dyadic coping interaction, partners in support provider situation will take over the speaker role and offer their partners support. Applying a lifespan perspective, we assume that older partners in the disclosing phase (beginning of the interaction) of the stress communicator situation, use less words to describe their stressful situation (lower word count), use less *I* (less emotional self-disclosure, and less emotional involvement), and more *we* words compared to younger couples. Towards the end of the stress communicator situation, we expect that the older the support communicator, the less word count, less *I* words (than in the beginning of the interaction and also less than

younger adults), less *you* words, and more *we* words they use.

In the support provider situation, we expect that older partners speak less when their partners is talking about his/her stressful situation than younger partners, and they use less *I* words, reflecting less engagement. Finally, it is expected that older adults show less active exploration of the stress situation with open-end questions and more communal perspective, which will be reflected in less use of *you* words and more use of *we* word.

Results of previous studies showed that how couples perceive their partners efforts for support is a stronger predictor of relationship satisfaction than the actual provided support and also retrospective and prospective coping strategies mostly differ (M. Landis et al., 2013; Tennen et al., 2000), hence it is important to investigate dyadic coping efforts of the partners in an objective way.

4.3.3 Method

The present study is part of a larger research project on the impact of stress on relationship development of couples and children across the lifespan.

Participants

In total, $N = 368$ intimate hetero-sexual couples were recruited for this study. Participation required couples to have been sharing an intimate relationship for at least one year at the time of survey. Couples from three different age groups were recruited: (1) 20 to 35 years, (2) 40 to 55 years, and (3) 65 to 80 years. Because of the missing data we had to exclude 4 couples from the sample. Final sample included $N = 121$ young, $N = 124$ middle-aged, and $N = 119$ old couples. Demographic information of the participants is listed in Table 4.8.

Procedure

Recruiting for this study began with advertising in the local newspapers and radio. In these advertisements couples were invited to participate in a study on the impact of stress on their relationship development. Interested couples received detailed information about the procedure of the study. If the couple were interested they were asked to individually complete the questionnaires at home and brought the questionnaires to the laboratory. At the laboratory, both partners signed the informed consent form. In the laboratory partners were asked to complete additional sets of questionnaires in two separate rooms.

Table 4.8: Demographic characteristics of the participants

	Couples($N = 360$)	
	Female	Male
Relationship duration, $M(SD)$	**? (?)**	
Marital Status		
Not married	25.8%	
Engaged	1.1%	
Married	58.1%	
2nd Marriage	8.1%	
Children	65.6%	65.5%
Education		
Primary School	2.0%	1.4%
Secondary	3.1%	1.7%
Commercial	41.7%	34.8%
High school	20.7%	12.8%
University	31.4%	49.3%

After that, couples performed three videotaped interaction tasks: one standard conflict interaction task and two tasks of mutual support. For this study we use data from the two dyadic coping interactions.

Dyadic coping task Each of the partners was asked to choose a relationship external topic (not directly related to their relationship) about which they had *recently* felt stressed. To find the subject, couples were provided with a list of eight suggestions (word and education, social life, leisure activities, children, family of origin, living conditions, finances, and daily hassles) with the possibility of choosing topics, which were not on the suggestion list. Each partner had to talk about the stressful event or subject with the other partner. After the first eight minutes, partners changed the roll and the next partner could talk about her/his stressful subject. These interactions were video recorded. Couples were told to behave as in their daily lives. The procedure was evaluated and approved by the local ethics committee.

Verbal communication A team of trained research assistants transcribed the recordings of the conflict interactions from standard German and Swiss-German dialect into standard written German(see Neysari et al., 2016). These transcripts were analyzed using Linguistic Inquiry and Word Count (LIWC), a software package for quantitative text analysis with a series of built-in dictionaries (Pennebaker et al., 2007; Wolf et al., 2008). LIWC counts each word, sorts it into a linguistic category, and then gives the percentage of each word category. One of the LIWC categories is “personal pronouns”, which is divided into “I”, “you”, “we”, and “other”. The word category “I” includes personal

pronouns relating to self (*me*, *my*, *mine*), "you" includes pronouns *you*, *your*, *yours*, and "we" includes *our*, *ours*, *we*, and *us*. An earlier study with a different conversation task (conflict interaction) revealed that 1-minute segments allow a good portion of natural language use to be captured and analyzed (Neysari et al., 2016). Thus, in this study we analyzed the transcripts of the two eight-minute long dyadic coping interactions in eight time segments.

Data analysis

The dataset consisted of 360 (couples) x 2 (persons) x 8 (sequences) x 2 (situations) = 11520 observations. For our analyses, we used a multilevel model for dyadic data as suggested by Laurenceau and Bolger (2005) that treats the three levels of distinguishable dyadic data (dyads nested within persons nested within couples) as two levels of random variation and is called double entry or double intercept model. The lower level represents variability due to within-person repeated measures for male partners and female partners taking into account the covariation within dyads. The upper level represents between-couples' variability across the male partners and across the female partners (Bolger & Laurenceau, 2013). The models were estimated in R (R-Core-Team, 2013, version 3.0.1) using the lme4 package (Bates et al., 2013).

To test our hypotheses, we modeled the change in pronoun use over the course of the eight sequences by introducing a variable *time* which represents the number of sequences over both conditions. *Time* was centered at the first sequence of a dyadic coping interaction such that time ranged from $i \in [0, 7]$ in Equations 4.17 and 4.18. In all models, we tested for linear (*time*) and quadratic (*timeQ*) effects of time. As relationship duration is correlated with $r = .xx$ with age this can also be seen as a control for the big range of age in this sample. The models tested for fixed and random effects of time and for fixed effects of situation (stress communicator = 0; support provider = 1), the two way interactions of *time* (*linear* and *quadratic* effects) x *age* and *situation* x *age*; and the three way interaction of *time* (*linear* and *quadratic* effects) x *situation* x *age*.

Equations 4.17 to 4.24 represent the model testing for the linear and quadratic effects of time and the situation effect on pronoun use.

Double entry models were specified as follows: Equations 4.17 and 4.18represent the models testing for the linear and quadratic effects of time on pronoun use separately for male and female partners. Equations 4.19 to 4.24 represent models testing for the effects of situation, controlling for relationship duration the overall use of pronoun (4.19 and

4.20), as well as for situational differences in linear (4.21 and 4.22) and quadratic trends (4.23 and 4.24) over time.

$$YM_{ij} = \beta_{0jM} + \beta_{1jM}(time_{ij}) + \beta_{2jM}(timeQ_{ij}) + \epsilon M_{ij} \tag{4.17}$$

$$YF_{ij} = \beta_{0jF} + \beta_{1jF}(time_{ij}) + \beta_{2jF}(timeQ_{ij}) + \epsilon F_{ij} \tag{4.18}$$

$$\beta_{0jM} = \gamma_{00M} + \gamma_{01M}(sit_{jM})(age_{jM}) + \mu_{0jM} \tag{4.19}$$

$$\beta_{0jF} = \gamma_{00F} + \gamma_{01F}(sit_{jF})(age_{jF}) + \mu_{0jF} \tag{4.20}$$

$$\beta_{1jM} = \gamma_{10M} + \gamma_{11M}(sit_{jM})(age_{jM}) + \gamma_{12M}(age_{jM}) + \mu_{1jM} \tag{4.21}$$

$$\beta_{1jF} = \gamma_{10F} + \gamma_{11F}(sit_{jF})(age_{jF}) + \gamma_{12F}(age_{jF}) + \mu_{1jF} \tag{4.22}$$

$$\beta_{2jM} = \gamma_{20M} + \gamma_{21F}(sit_{jM})(age_{jM}) + \gamma_{22M}(age_{jM}) + \mu_{2jM} \tag{4.23}$$

$$\beta_{2jF} = \gamma_{20F} + \gamma_{21F}(sit_{jF})(age_{jF}) + \gamma_{22F}(age_{jF}) + \mu_{2jF} \tag{4.24}$$

4.3.4 Results

Results of the double intercepts models are in detail presented in Table 4.9.

Word count. The three way interactions of *linear time* x *situation* x *age* and the three way interaction of *quadratic time* x *situation* x *age* were significant for male and female partners. Over the two situations older couples show less temporal changes in word count.

Age differences are more prominent in stress communicator situation. As shown in Figure 4.9, higher age is associated with more stable number of spoken words over the course of interaction. While word count of younger partners follows an inverted u-shaped curve, word count of older couples remains mostly stable over the course of the interaction in stress communicator situations.

In support providing situation higher age is related to a steeper increase towards the middle of the interaction and a steeper decrease of word count in the end of the interaction.

***I* talk.** The *time* x *situation* x *age* interaction, for both linear and quadratic effects of *time* were significant for male and for female partners. In stress communicator situations partners from different age groups start their conversation at different levels of use of

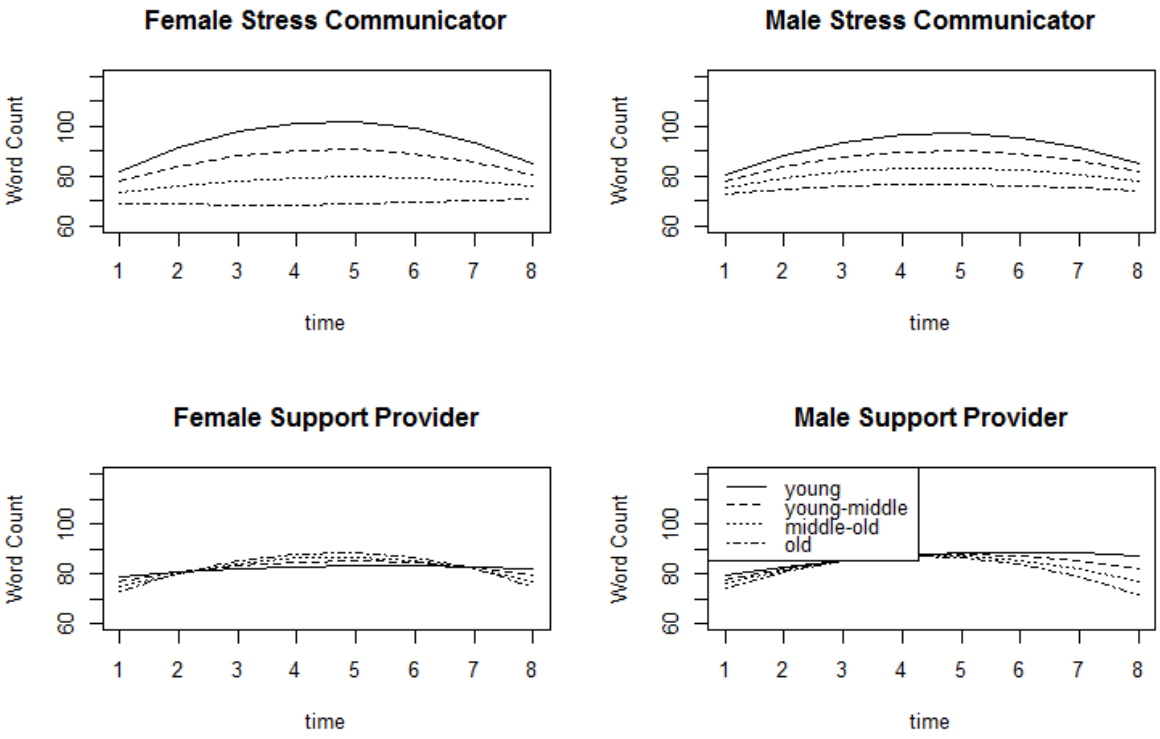

Figure 4.9: Change in word count over time for partners in stress communicator and support receiver situations in young, young-middle, middle-old and old age (in these plots age is divided in four groups for a better overview, age was handled as a continuous variable in all models).

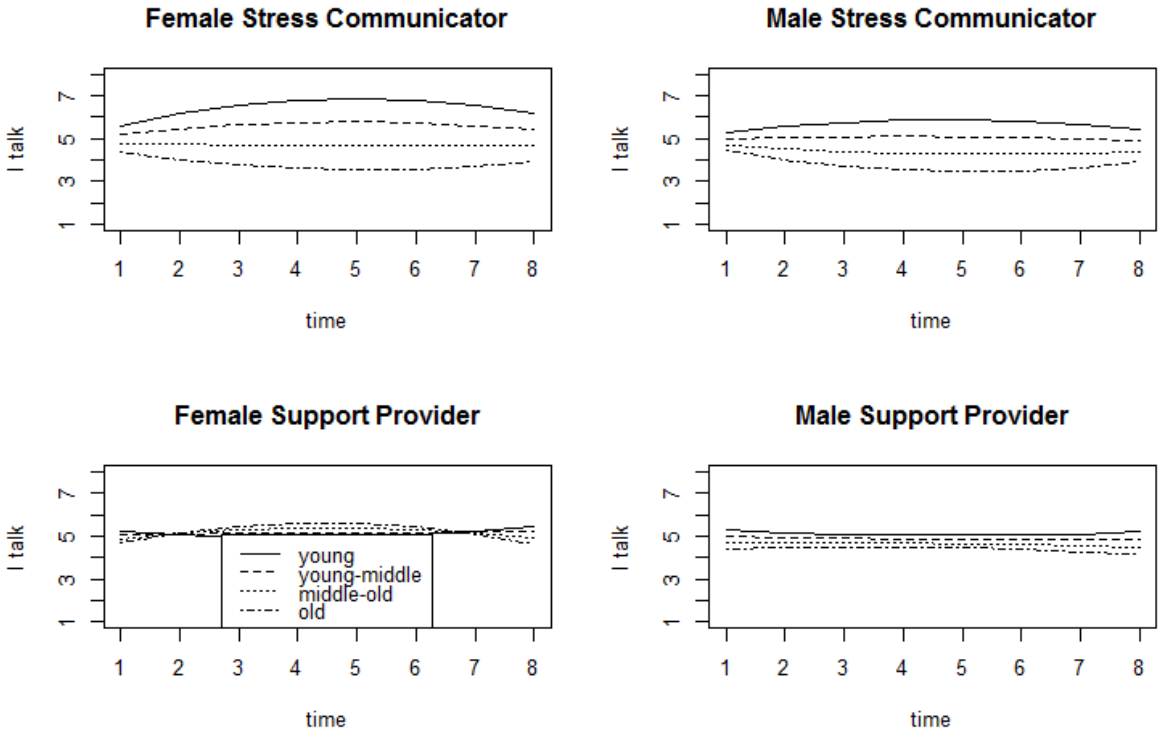

Figure 4.10: Use of *I* words over time (1-8) for partners in stress communicator and support receiver situations in young, young-middle, middle-old and old age (in these plots age is divided in four groups for a better overview, age was handled as a continuous variable in all models).

I words and their use of *I* words follows different trajectories over the time. Younger partners in stress communication situations with higher levels of *I* talk and their *I* talk increases slightly in the middle of the interaction and levels off again in the end of the interaction. Older partners start their stress communication with lower level of *I* talk, as compared to younger partners. The use of *I* talk by older partners shows a slight decrease of the course of the interaction. In support providing situations higher age is associated with less *I* talk. Older female partners in support providing situation, show an increase in *I* talk over the course of the interaction. These results are shown in Figure 4.10.

***You* talk.** There were no significant *time* x *situation* x *age* interactions for *you*-words. However, there was a significant *situation* x *age* interaction. *Age* is associated with different levels of *you* talk in stress communication versus support provider situation, but is not associated with different trajectories of change of *you*-talk over the time of dyadic coping interactions. As shown in Figure 4.11, older partners use fewer *you* words than younger partners and the different of *you* use by different age groups is more prominent in support providing situation.

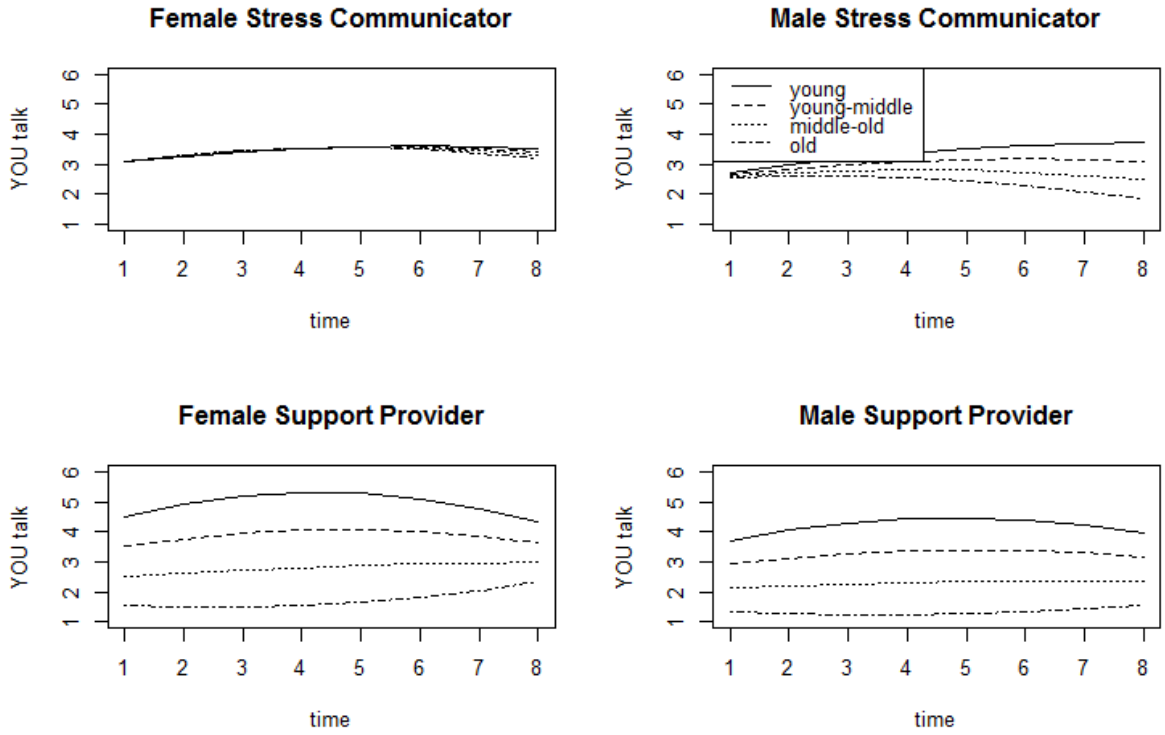

Figure 4.11: Use of *YOU* words over time (1-8) for partners in stress communicator and support receiver situations in young, young-middle, middle-old and old age (in these plots age is divided in four groups for a better overview, age was handled as a continuous variable in all models).

Figure 4.12: Use of *We* words over time (1-8) for partners in stress communicator and support receiver situations in young, young-middle, middle-old and old age (in these plots age is divided in four groups for a better overview, age was handled as a continuous variable in all models).

***We* talk.** The linear and the quadratic effects of *time* in interaction with *age* were significant for male and female participants. As shown in Figure 4.12, in both situations higher age is associated with more frequent use of *we* words.

4.3.5 Discussion

Our study was examined to test age effects on temporal and situational dynamics of communication in dyadic coping interactions of couples. Each dyadic coping interaction consists of the self-disclosure of one partner about a stressful subject and the support providing efforts of the other partner (Bodenmann, 2005). Developmental psychologist suggests different changes that occur in individuals and in couples as they age (Charles, 2010; Lang & M. M. Baltes, 1997; Levenson et al., 1991; Siebert et al., 1999). Hence, we assumed that the temporal and situational changes of verbal communication in dyadic coping interactions are associated with age.

Confirming our assumption, results of this study showed that temporal and situational changes of word use by couples is associated with the dyadic processes in coping situations

Table 4.9: Results from multilevel models predicting linear and quadratic trends in two situations in the word count, use of relational pronouns *I*, *we* and *you* in distinguishable dyads.

Variable	Word count b (SE)	*I* b (SE)	*You* b (SE)	*We* b (SE)
Fixed Effects				
Female Intercept	**69.91** (2.26)	**4.82** (0.21)	**2.84** (0.20)	0.70 (0.11)
Male Intercept	**70.98** (2.27)	**4.92** (0.23)	**2.44** (0.19)	0.88 (0.09)
Time_F	**53.71** (9.65)	1.52 (0.56)	**2.17** (0.77)	0.31 (0.42)
TimeQ_F	**-45.07** (8.34)	-1.26 (0.54)	**-1.63** (0.65)	0.06 (0.35)
Time_M	**56.02** (9.80)	-0.25 (0.58)	**1.72** (0.74)	-0.20 (0.39)
TimeQ_M	**-46.82** (8.47)	0.05 (0.54)	**-1.29** (0.64)	0.54 (0.35)
$(\text{Time x Age})_F$	**-34.62** (6.43)	**-3.17** (0.56)	0.13 (0.47)	**0.78** (0.21)
$(\text{TimeQ x Age})_F$	**30.38** (7.04)	**2.51** (0.63)	-0.23 (0.53)	**-0.60** (0.25)
$(\text{Time x Age})_M$	**-20.09** (6.63)	**-2.26** (0.55)	-0.40 (0.46)	**0.74** (0.23)
$(\text{TimeQ x Age})_M$	**16.79** (7.17)	**1.82** (0.62)	-0.16 (0.53)	**-0.54** (0.27)
$(\text{Situation x Age})_F$	-3.98 (3.15)	-0.41 (0.18)	**-0.68** (0.26)	0.25 (0.13)
$(\text{Situation x Age})_M$	-2.91 (3.18)	-0.32 (0.19)	**-0.54** (0.26)	0.12 (0.13)
$(\text{Time x Age x Situation})_F$	**54.85** (13.79)	**5.49** (0.95)	-1.96 (1.13)	-0.95 (0.58)
$(\text{TimeQ x Age x Situation})_F$	**-48.68** (12.71)	**-4.67** (0.97)	**2.16** (1.04)	0.84 (0.52)
$(\text{Time x Age x Situation})_M$	**33.30** (13.90)	**2.86** (0.98)	-1.00 (1.13)	-0.46 (0.54)
$(\text{TimeQ x Age x Situation})_M$	**-31.69** (12.80)	**-2.41** (0.99)	1.38 (1.04)	0.44 (0.50)
Random Effects (SD)				
Between Couple				
Female	8.99	1.63	1.71	1.41
Male	9.90	2.08	1.52	0.75
Time Female	65.35	2.49	5.40	4.47
TimeQ Female	54.95	1.91	3.81	3.46
Time Male	72.65	3.70	3.85	3.33
TimeQ Male	61.23	2.14	2.86	3.22

as suggested by Bodenmann (2005).

In line with the assumption, number of word counts in dyadic coping interactions changed over the course of the interaction, and these unfolding of word count over each dyadic coping interaction was also different with regards to the situation and age. Our results suggests that younger partners need more clarification in the first half of a dyadic coping interaction than older partners. In contrast older couples seems to need less words to engage in dyadic coping interactions.

Furthermore, higher age was associated with less use of *I* words. While use of *I* words by younger couples changed over time and situation, use of *I* words by older couples remained mostly stable over the course of the interactions in both situations. The less use of *I* words by older couples might reflect the avoidance of activation of negative emotions as found in previous studies (Charles, 2010). By avoiding *I* statements they manage to speak about their stressful topic with less self-focus and a certain emotional distance. This temporal and situational adaptation of stress communication could be adaptive for older participants, because once they are physiologically involved with high arousal negative emotions it is for difficult to get back to the pre-reactivation physiological statues (Charles, 2010). Moreover, older partners in stress communicator situation use more *we* words, which could be interpreted as reflection of a communal perspective and *we*-ness in relationship. Interestingly this communal perspective is shown in both partners also the one communicating the stress situation.

As suggested before, in old age, partners see their spouses as the most important source of support and they can compensate losses in different domains with their partners remaining abilities. Hence, with more involvement of their partner, and sharing the stress as a *we* stress (Revenson et al., 2005) they might increase their chances for successful dealing with the stressful event/subject. This finding is also in line with socio-emotional selectivity theory (Carstensen, 1992, 1993), which suggests a more pronounced focus on the pleasant and meaningful features of interaction in older age. These shift of focus in old age is reflected in our results in more frequent use of *we* words and less *I* words.

In support provider situations, independent of the course of the interaction, higher age was related to less use of *you* words. Use of *you* statements in support providing situations might reflect partner's efforts to understand the stressful situation of the partner by asking questions "how did make you feel?" or "what do you think is better to do?" or by rephrasing partners self-disclosure sentences to show his/her understanding of the situations like, "I understood, you had felt" or "so your boss told you to do". Asking

questions for better understanding and paraphrasing the partners seems a situationally adaptive communication behaviors in dyadic coping interactions (The Couples Coping Enhancement Training, Bodenmann and Shantinath (2004)). However, this might be different for old couples. Older couples, which in our study also were those couples with the longest relationship durations, know well their partners' stresses and also their reactions to the stresses because of longer experience of sharing life events with them. Hence, their less frequent use of *you* words might reflect less need for clarification. Still it could also reflect less motivation for clarification. Further research is needed to explore the potentially different adaptiveness of certain strategies over the lifespan. Furthermore, by not asking too many questions, support providers do not attempt to deepen the conversation and therefore avoid activating the negative emotions of partner by asking more questions. It has been suggested that with growing age, and accumulated experience couples become expert in dealing with individual stress as a team (Peter-Wight & Martin, 2011). Thus, expertise might help them to have effective communication with less words and less questions, while younger couples may need more and deeper stress related communication to possibly successfully overcome the stressful event. This, could be driven by the different problems and different developmental tasks that couples face as they age (McCrae, 1982). While younger partners most probably have more work-related stressors, which happen in a context that the partners usually do not share, couples with old age, most probably share more often the contexts of the sources of stress.

It is an interesting question, whether the results reflecting less engagement during dyadic coping interaction is due to avoidance of negativity and arousal or expert status as experienced team in dyadic coping of *we*-stress. The current study cannot answer this. However, the results may encourage further process related research of dyadic processes and its differences over the lifespan. Moreover, in this study it was not tested, weather couples had successful dyadic coping interactions. Hence, future research is needed explicitly testing communication behavior in dyadic coping interactions, with controlling the topic of the interactions and testing the association between communication behavior and relationship related outcomes.

They show that the temporal dynamics of dyadic coping are different in different age groups. Dyadic coping processes are at the core of interpersonal processes that represent fundamental pathways of healthy aging and satisfaction of health over the lifespan (Martin, Jäncke, & Röcke, 2012). This study might shed light on the differences of these important processes of adjustment over the lifespan.

Chapter 5

Discussion

In this chapter, the results from the studies presented in Chapter 4 are summarized, and their relevance is discussed by relating them to the research questions presented in Chapter 2. The main aims of this thesis were to investigate the temporal and situational dynamic processes in dyadic communication in a conflict interaction and in two dyadic coping interactions. Moreover, the associations between aging and these temporal and situational dynamics are tested.

5.1 Summary and discussion of study results

5.1.1 Temporal Dynamics of dyadic communication

The first study of this dissertation examined the temporal dynamics of dyadic communication in a conflict situation. Typical dyadic process in a conflict interaction can be divided into an agenda-building phase, followed by an arguing phase and finally a negotiating phase (Gottman, 1979). Following this segmentation, conflict interaction starts with mutual agreement about the topic of the conflict, followed by personal perspective taking on the issue and disclosure about the subject, possibly blaming and accusation. In the negotiation phase, partners may come to a mutual solution and agreement. To test these patterns of dyadic communication processes over the duration of a conflict interaction, we focused on the use of personal pronouns by couples and the changes in this use. It was assumed that in the agenda building phase and in the negotiation phase, couples more frequently use *we* words, which reflects their agreement on the problem and the solution or agreement about how to deal with the problem. Furthermore, it was assumed that partners use more *I* (self-disclosure) and *you* (blaming and finger pointing) words in the arguing-phase to express their points of view.

As expected *I* talk showed an inverted u-shape slope over time in female participants. Female partners used significantly more *I* words in the arguing phase than in the agenda building phase at the beginning of the conflict.The greater use of I *I* words by women is already known in literature (Mehl & Pennebaker, 2003; Newman et al., 2008), and this is again related with previous findings showing that women are emotionally more expressive and better at making disclosures (Carstensen et al., 1995; Christensen & Shenk, 1991; Heavey et al., 1993). Use of *you* words declined over the course of the conflict interaction,

which might reflect a decease in arguning and blaming (Georgiou et al., 2011).

In line with our assumption, changes in the use of we words over the course of the conflict interaction followed a u-shape trajectory for male partners, showing more communal perspective and togetherness in both topic finding and solution or agreement finding. Interestingly, this assumption was only found to be relevant for male partners, which could be related to the tendency of male partners to de-escalate the negative interaction (Carstensen et al., 1995). *You* words, which are mostly associated with negativity in conflict situations (Gottman, 1993) decreased over the course of the interaction, which might reflect the calming of couples their discussions continue.

In summary, our study showed that the use of personal pronouns changes during a conflict interaction and that these temporal changes can reflect the dyadic processes of interest embedded in a conflict situation. These results from multilevel models with longitudinal dyadic data show that dyadic verbal communication in a conflict situation is a dynamic process that can be observed by investigating the use of pronouns by couples. In this study, these dynamic processes of conflict interaction were tested for different age groups, an aspect of the research design that is discussed in Section 5.1.3.

5.1.2 Temporal and Situational Dynamics

The findings of Study 1 led us to examine the temporal dynamics of dyadic communication in other situations, which we tested in Study 2. The results of Study 1 demonstrated the possibility of testing dyadic processes in a conflict situation by investigating couples' use of personal pronouns. Yet, it was not known whether and if so how these temporal dynamics change depending on the situational characteristics of a dyadic interaction. The relevance of situational variabilities to the occurrence of certain behaviors has been discussed before (Mischel, 1968; Mischel et al., 2002; Mischel & Peake, 1982; Radtke, Inauen, Rennie, Orbell, & Scholz, 2014). However, the effects of these situational variabilities on the temporal dynamics in dyadic communication have not yet been investigated. Hence, this time we tested the temporal patterns of change in verbal communication in two dyadic coping interactions. In his process-oriented view on dyadic coping, Bodenmann (1995, 1997, 2005) suggests that each dyadic coping interaction can be roughly divided in two phases: the self-disclosure of the stress communicator and the supporting effort of the support provider partner. This segmentation led to the expectation that the use of *I* words, *we* words, and *you* words over the course of two dyadic coping interactions would

follow specific patterns reflecting the dyadic processes in coping situations.

Each couple took part in two 8-minute dyadic coping tasks, in which partners changed their roles. Each partner was the stress communicator once, and the other time in the role of the support provider. Changing roles in the two dyadic coping interactions, allowed the testing of situational effects on the temporal changes in couples' word use. The assumption was that patterns of partners' use of *I* words, *you* words, and *we* words change, depending on the situation. In addition to the use of personal pronouns, in this study the number of words spoken by couples was also counted over the 8 minutes of each dyadic coping interactions.

As expected, results showed significant effects of time, confirming the temporal changes of communication in two dyadic coping interactions. Although the results confirmed temporal dynamics for the use of personal pronouns over the course of the two dyadic coping interactions, from a statistical perspective, it is more logical to discuss the temporal dynamics with respect to the situational dynamics caused by switching the roles between couples. Couples' use of pronouns changes over the 8 minutes of the dyadic coping interactions; however this temporal unfolding depends on the situation.

Figure 5.1 illustrates the random slopes of each person over the 8 minutes of dyadic coping interaction in two different situations.

Figure 5.1 illustrates the temporal and the situational dynamics of word count for each person. Dyadic coping interactions begin with more talking by the stress communicator. While the stress communicator's word use decreases over the course of the interaction, partners in support provider situation talk more over the 8 minutes of the interaction. As expected, stress communicators used more I words, which can be interpreted as personal disclosure (Ickes et al., 1986), while the partners in the support provider situation used more *you* words. The more use of *you* words by support providers can play a functional role, because it helps the support provider to better understand the cause of the stress (CCET) (Bodenmann & Shantinath, 2004)and adapt support so as to provide an optimal matching model, (Cutrona & Russell, 1990; Cutrona et al., 2007). As stress communicators, partners used more *we* words than as support providers, which might reflect stress communicators efforts to activate a communal perspective and to awaken a sense of *we*-ness in partners to help solve the problem jointly (Bodenmann, 2005).

The context dependence change in the possible meaning of use of you words is particularly noticeable. In contrast to the findings regarding *you* words in a conflict situation, the use of *you* words by support providers, could be an adaptive communication behavior,

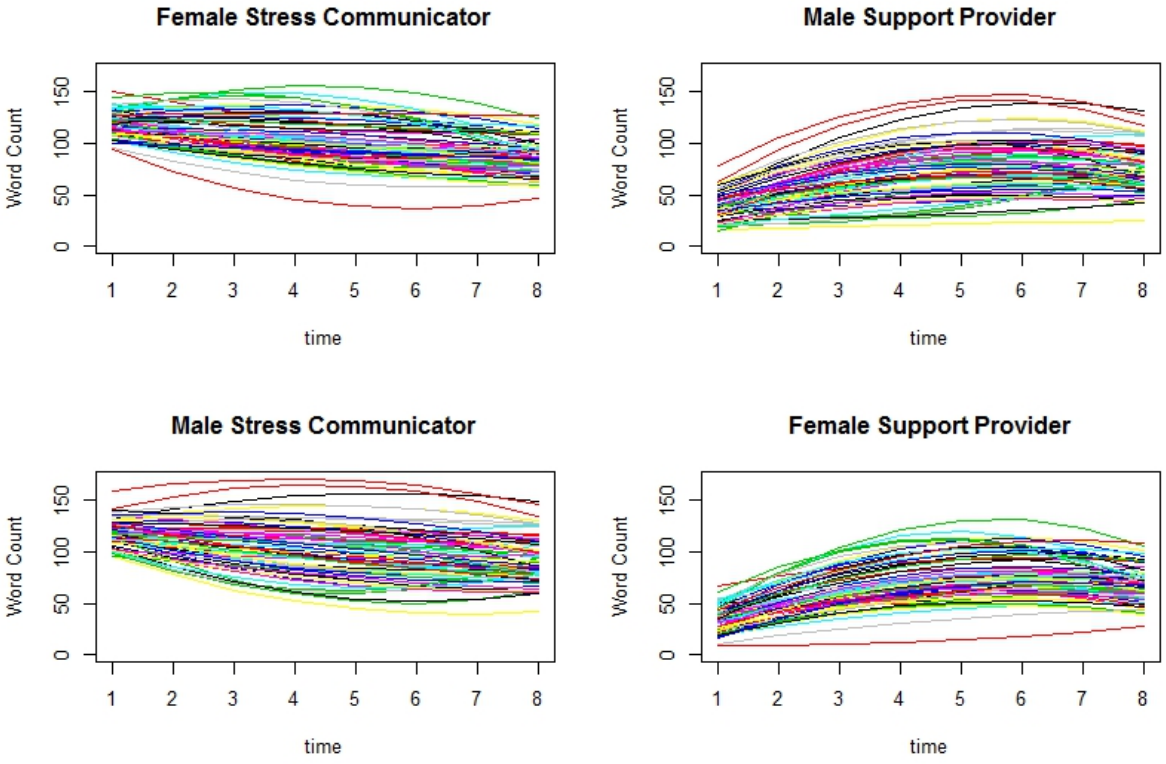

Figure 5.1: Plots of subject specific regression line (random slopes) for each partner's word count as a function of time (1-8) and situation (stress communicator vs. support provider)

helping partners to interact more effectively. Comparing the findings of the first study with those of the second study, indicated the importance of considering the situational context for interpretation of dyadic communication.

5.1.3 Temporal and Situational Dynamics over the lifespan

The findings of Study 1 and Study 2 raised the question whether the temporal and the situational dynamics that we found in the Study 2 can be affected by age. Developmental psychologists suggest changes in intimate relationships and in dyadic communication over the lifespan (Carstensen, 2006; Kern et al., 2014; Lang & Carstensen, 1994; Levenson et al., 1993; Pennebaker & Stone, 2003; Seider et al., 2009; Sillars et al., 1997). Various studies have discussed changes in emotion regulation and in social interactions over the lifespan(Birditt et al., 2005; Carstensen et al., 2000; Gross et al., 1997; Levenson et al., 1991; Revenson et al., 2005). Literature on aging suggests that age changes the overall behavior of both individuals and couples. However, to our best knowledge, no study has yet investigated changes in the temporal and situational dynamics of couple communication in different age groups. Hence, within Study 1, which has been discussed in Chapter 5.1.1 and in Study 3, the temporal and situational changes of dyadic verbal communication are investigated in a dyadic conflict situation and in two dyadic coping situations. Hence, within the Study 1, which have been discussed in Section 5.1.1 and in the Study 3, the temporal and situational changes of dyadic verbal communication are investigated in a dyadic conflict situation and in two dyadic coping situations. In this thesis (second part of Study 1 and in Study 3), higher age was associated with a steeper decline in the use of you words over the course of the conflict interaction and less use of you words in support provider situations. Less use of *you* words in conflict interaction is in line with previous findings, which showed that older individuals are less engaged in negative interactions (Seider et al., 2009) and exhibit less blaming behavior.

Higher age was found to be associated with fewer *I* words in conflict interaction. However, age did not seem to affect the use of *I* words over the 8 minutes of the conflict interaction. In dyadic coping interactions, however, partners' age significantly affected the temporal and situational changes in couples' use of *I* words. The lower use of *I* words in conflict situations and less temporal and situational changes in use of *I* words by older partners might reflect their lower self-focus in negative situations and lower engagement in negative interaction with the partner (Carstensen, 1992, 1993).

By avoiding frequent use of *I* words, older partners disclosed their stressful situations with more personal distance from the subject (fewer *I* statements). Older partners may adapt to avoid reactivation of negative emotions related to the subject of the discussion. At the same time, the greater focus on togetherness and increasing use of *we* words over the course of the dyadic coping interactions may indicate that older partners face the stressful topic as a team with accumulated expertise in mutual problem-solving (Peter-Wight & Martin, 2011). Partners become a more important source of support and can compensate for other domains of life such as decreases in physiological capabilities and shrinking social networks (SOC, P. B. Baltes and M. M. Baltes (1990)).

The results of Study 3 showed that the temporal patterns of word use by couples of different ages were mostly parallel in stress communicator and support provider situations. In other cases, where temporal and situational dynamics differed depending on couples' age, older couples showed fewer temporal variabilities during the interactions. These results suggest that, even though there are age differences, the processes and the short-term variability during an interaction are broadly similar for couples from different age groups. Moreover, the lower temporal variability exhibited by older partners in dyadic coping interactions might be because older couples over the years gain expertise in dyadic communication and manage their interactions. Patterns of temporal dynamics in different situations suggest that older couples engage in communication with their partner with less emotional arousal (lower word count and fewer *I* words) and focus more on communal and solution-oriented interaction (more *we* words). However, it remains an interesting question whether less talking and fewer temporal changes in the verbal communication of older partners relate to the avoidance of negativity or to their expertise in dyadic problem-solving.

5.2 Overall Discussion

The focus of this thesis was on these short-term variabilities in dyadic verbal communication. This thesis is the first attempt so far to investigate the minute-by-minute changes in couples' verbal communication. The temporal dynamics of verbal communication uncovered by this thesis led to the conclusion that minute-by-minute changes in use of personal pronouns can reflect the dyadic processes that have been introduced in theory. Although process-oriented theories suggest segmentation and chains of behavior in dyadic conflict interaction (Gottman, 1979) and in dyadic coping interaction (Bodenmann, 2005), most

studies have investigated dyadic communication in these interactions overall, neglecting the temporal dynamics. The findings of this thesis show that counting the occurrence of personal pronouns can be a promising method to investigate the dyadic process suggested by theories on conflict and dyadic coping interactions in intimate relationships.

This thesis has also provided evidence of differences in temporal patterns of minute-by-minute change that depend on the partner's role. Results suggest that the temporal dynamics of dyadic verbal interactions are adapted to the specific situation and depend on the situational characteristics. Hence, not only does the occurrence of a certain behavior depend on the situation (Mischel, 1968; Mischel et al., 2002; Mischel & Peake, 1982; Radtke et al., 2014), but also it seems that the order of the chains of behavior in a dyadic interaction depend on the situational characteristics. Aging research is mainly characterized by research and theories about age-related changes over the lifespan (Carstensen et al., 1995; Lang & Carstensen, 1994), and (Levenson et al., 1993, Ch. 1.1) (Aging and intimate relationship over the lifespan). Studies mainly focus on age group differences or long-term changes in aging individuals. Likewise, previous studies in fields of both intimate relationships and language use over the lifespan mostly focus on differences between age groups (Carstensen et al., 1995; Nikitin et al., 2014; Pennebaker & Stone, 2003; Seider et al., 2009; Sillars et al., 1997). Furthermore, studies with longitudinal designs are mostly based on widely spaced assessments, with few exceptions(Li, Aggen, Nesselroade, & Baltes, 2001; Nesselroade, 2001) and most longitudinal studies handled short-term variations as measurement errors (Martin & Hofer, 2003). The results of this thesis, however, show that within couple short-term variations, at least in dyadic interactions, can provide information that is interesting for research about dyadic processes. Moreover, this thesis concludes that age differences are not only based on overall differences in dyadic communications in couples, but also on age differences in micro-level processes. Longitudinal research on age differences in within-couple and within-person fluctuations is needed to complement the available information on underlying processes and mechanism of long-term changes (P. B. Baltes, Reese, & Nesselroade, 1977; Röcke, Li, & Smith, 2009).

Age and relationship duration were strongly correlated in these samples. Thus, it is not possible to distinguish between age and relationship duration effects (see also Carstensen et al. (1995)). For example, higher levels of old couples' *we* talk in dyadic coping situations might result from their age. However, it is also possible that relationship duration is the important factor in shaping the togetherness. More research with couples from dif-

ferent age groups with more heterogeneous relationship durations is needed to be able to distinguish the age and relationship duration effects. For this thesis, we used the samples of couples' natural language use in three different dyadic interactions. These interactions were videotaped in the laboratory. Thus, despite the objective observation of verbal communication, it is possible that couples' language use in daily life differs from their conversations in the laboratory and in the presence of a video-recording camera. Moreover, this thesis shows that quantitative analyses of natural language use with Linguistic Inquiry and Word Count (LIWC) is a promising method for testing dyadic processes. However, the counting approach alone ignores information that is important for understanding dyadic communication (e.g., context, tone, and sarcasm), and this constrains the interpretation of the results. Lastly, studying communication as a dynamic system requires data with flexible time segmentation. In these studies, interactions were artificially limited to 8 minutes, and it is not clear whether couples completed their discussions in such a short period.

5.3 Outlook and Concluding Remarks

This thesis contains studies based on observation of dyadic interactions in the laboratory, so the results need to be interpreted with caution. Future studies are needed using observations of dyadic interactions in "real-life" situations. However, observations in real-life context have advantages and certain disadvantages (Mehl & Conner, 2011). The studies in this thesis describe different patterns for temporal and situational change over the course of the dyadic interactions and observe these temporal and situational changes in different age groups. The functionality of these temporal and situational changes and whether they are adaptive, remains both unclear and an interesting subject for future research. It would be intriguing to study whether specific patterns of change are related to better or worse outcomes at the end of the dyadic interactions. In particular, it would be interesting to test the short-term and long-term functionality of these temporal and situational changes and adaptations. For example, the individual (or at couple-level) random slopes of changes in dyadic interactions might be used statistically to predict the short-term outcome of the dyadic interaction (e.g. emotional state after the interaction, or success of solution) or long-term outcomes in the relationship, such as relationship stability. Investigating the temporal and situational dynamics of old couples with high relationship satisfaction can help to understand the dyadic processes in these couples, which lead them

to successfully orchestrate their resources and so to stabilize their relationship (Martin, Jäncke, & Röcke, 2012). As a result, the knowledge that can be gained by testing the functionality of certain patterns of change in verbal dyadic interactions could be integrated in interventions aiming to improve couple communication. Recent developments in technology and the fact that electronic devices are now integral components of social interactions may give researchers the opportunity to gain access to real-life and real-time datasets (Miller, 2012), which can open new windows on the dyadic processes of intimate relationships by investigating couples' communication. With a new approach, this thesis contributed to the previous research on within-couples processes in dyadic communication in intimate relationship. Future person-centered and couple-centered research is needed to help developing person and couples-centered interventions in order to promote healthy ageing.

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